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MOTOR AGE

VOLUME XXII CHICAGO, AUGUST 1, 1912 NUMBER 5

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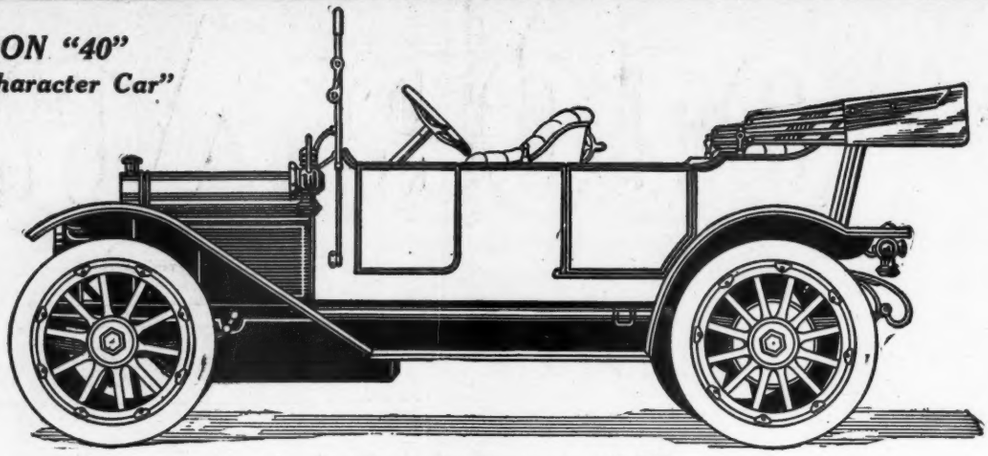

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GRINDING HEALD MACHINES

MOTOR AGE

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Volume XXII AUGUST 1, 1912 No. 5

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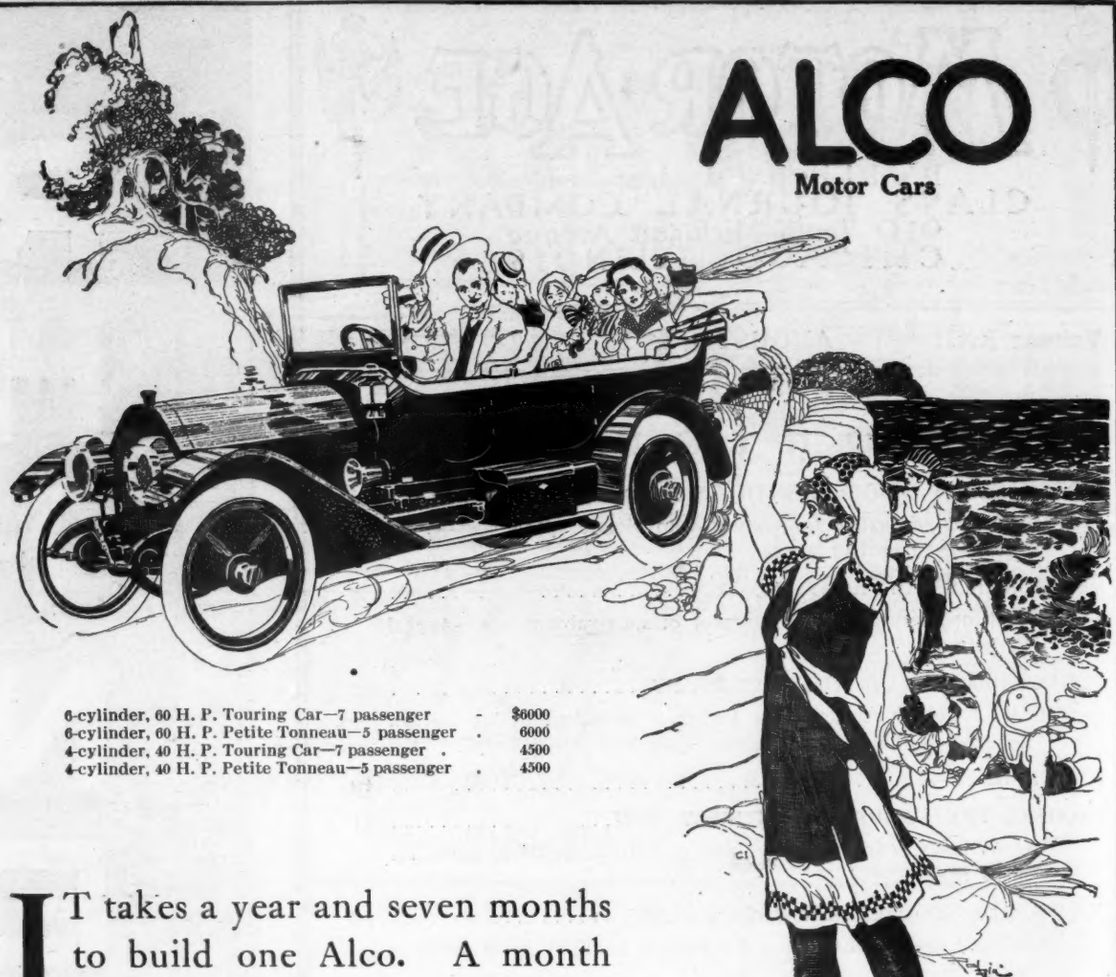
ALCO
Motor Cars



6-cylinder, 60 H. P. Touring Car—7 passenger	$6000
6-cylinder, 60 H. P. Petite Tonneau—5 passenger	6000
4-cylinder, 40 H. P. Touring Car—7 passenger	4500
4-cylinder, 40 H. P. Petite Tonneau—5 passenger	4500

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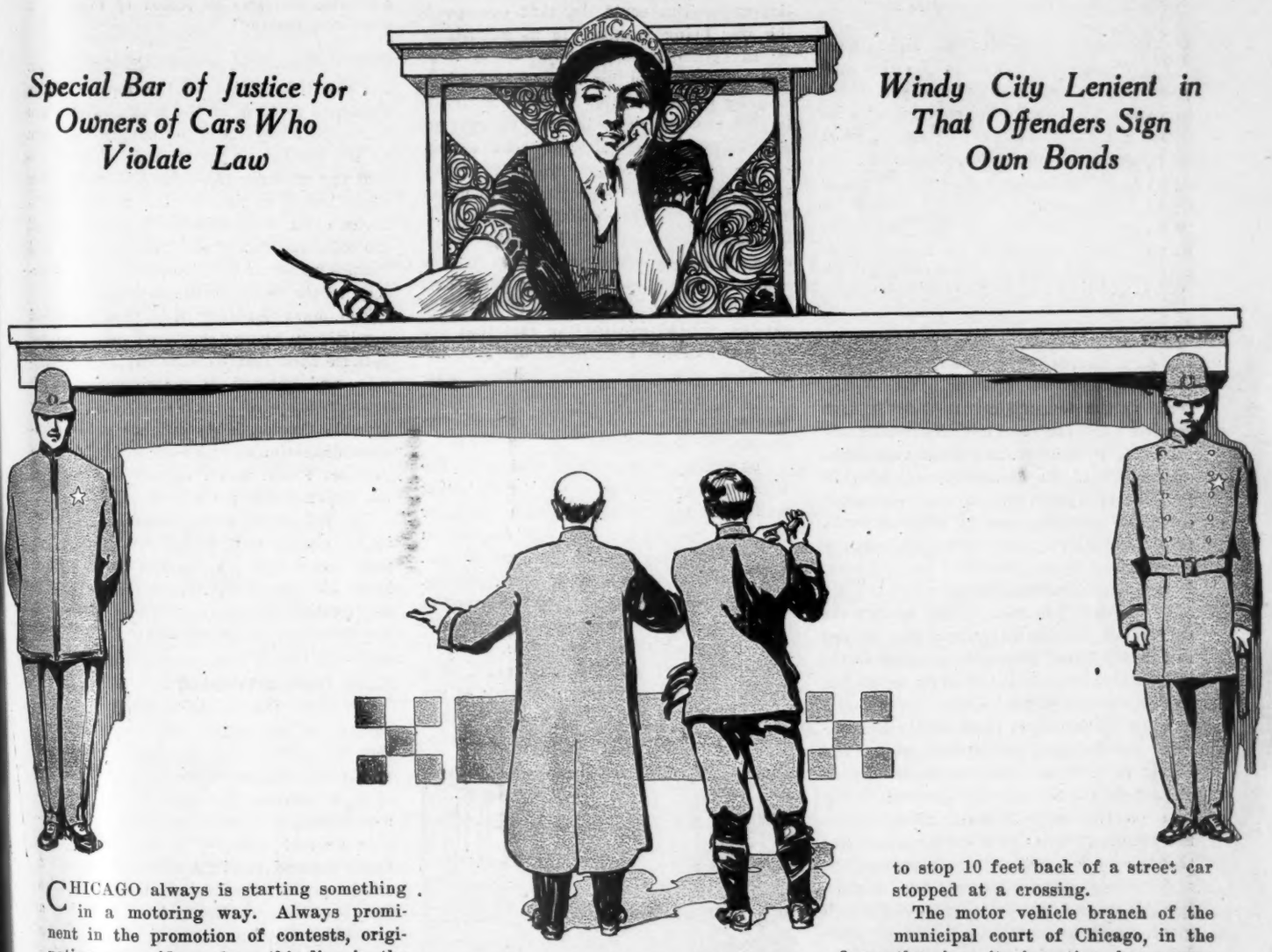
VOL. XXII, No. 5 CHICAGO, AUGUST 1, 1912 $3.00 PER YEAR

MOTOR AGE

Motor Court Original With Chicago

Special Bar of Justice for Owners of Cars Who Violate Law

Windy City Lenient in That Offenders Sign Own Bonds

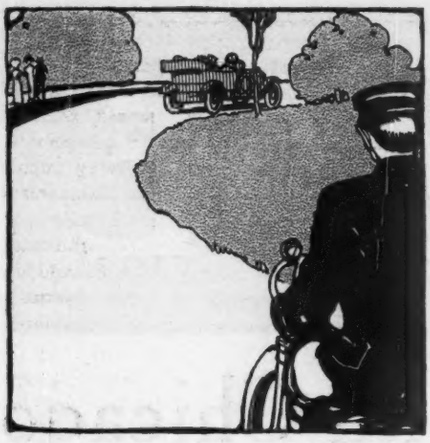


CHICAGO always is starting something in a motoring way. Always prominent in the promotion of contests, originating many ideas along this line in the shape of reliabilities, hill-climbs, road races and team matches, the Windy City now has something more of which to brag—the first exclusive motor court in the country, where all speeding cases are handled by judges thoroughly familiar with their work, who endeavor to decide impartially, show leniency to strangers caught in the meshes of the legal drag net, and to put it up to the officer making the arrest to back up his testimony with real evidence.

By Merrill C. Horine

Also Chicago has scored another legal bullseye by permitting motorists arrested for speeding to sign their own bail bonds, a privilege which is greatly appreciated after years of having to occupy a cell if a bondsman could not be found. Both these experiments have been tried for several weeks and have been found to work successfully. Chicago also is legislating in other channels, having banished the cut-out and making arrests of those who fail to stop 10 feet back of a street car stopped at a crossing.

The motor vehicle branch of the municipal court of Chicago, in the 2 months since its inception, has proven its value as a method of fairly and impartially dealing with violators of the Illinois motor vehicle law. This court is devoted entirely to cases of motor law violations, except when charges including such violations are complicated with additional charges, such as homicide, resistance, disorderly conduct, etc., and has exclusive jurisdiction over such cases. In order to intelligently discuss it, a brief outline of its history, and the conditions which led up to its establishment



"The work of the motor cycle police squad was so valuable it was increased in size"

are advisable preliminaries right now.

The Windy City, like all large cities with good streets and parkways, has a speed problem. In the effort to cope with its increasing gravity, LeRoy T. Stewart, when superintendent of police, organized on April 1, 1910, Chicago's motor cycle police squad. The work of this body was found to be so valuable that in 1911 the squad was increased from eight to twenty members. In 1911 3260 arrests were made by this detail, which resulted in the collection of $17,369 in fines imposed, all in addition to the arrests made and fines imposed by the park boards. The squad is composed of the steadiest and most agile men on the force, as the demands on an officer in such service are severe. They are constantly subjected to dangers, and serious accidents are frequent. Each man covers from 70 to 100 miles per day, and it is estimated by those most intimately affiliated with this body, that a motor cycle policeman is the equal of ten on foot.

Suppressing Reckless Driving

The park commissioners, under the supervision of the state, also were forced to take stringent measures to suppress the speeding that was indulged in upon the boulevards and in the parks. But reckless driving continued, in spite of these measures, for notwithstanding the great number of arrests that were made, the police were helpless to prevent speeding, being in a position only to make arrests. The fines imposed were on the average so low that even when arrested and convicted the majority of speeders were little discouraged, in many cases deeming it money well spent. Especially true was this of some drivers of taxicabs, who, to obtain extravagant tips made a regular practice of exceeding the speed limit, with the expectation of being apprehended on an average of one in twenty instances of speed-law violation. As the fines averaged but from $5 to $10, these drivers could well afford to pay their fines with a smile. The chances of greater penalty were not large, because, as speed cases were tried in the local police courts, there was little likelihood of the same driver being brought before the same judge twice. The majority of motor car owners were inclined to make light of the fines, and it is claimed much could be done with the local magistrates in the way of persuasion by influential members of the community, in escaping even the small penalty that was in force. The local justices, furthermore, owing to the comparatively small number of cases of this nature that were brought before each of them, little realized the gravity of the aggregate.

Accidents Arouse Chicago

As an outgrowth of these conditions, the figures of both the police and the coroner showed that reckless driving was on the increase. Under investigations made under the authority of the mayor, the facts were disclosed that in spite of all the police authorities could do, that overspeeding was being indulged in as a business by taxicab drivers, that joy rides were being indulged in by reckless motorists, who, by reason of their influence with the local authorities, were immune to legal action, and with such disastrous results, that, as set forth in the coroner's report, seventy-five deaths had occurred in motor accidents in the year ending April 30, 1912. Of these, of course, not all were the result of speeding, but the seriousness of the whole situation, as revealed in this report and the results of the mayor's own investigations, which revealed the fact that 150 cases of motor law violation had gone unpunished as a result of the political influence of the offenders, inspired the mayor to demand more drastic measures of prevention by the courts.

The method then in force was to try the offender in the district in which his arrest took place, requiring heavy cash bonds for bail, and leaving the trial and disposition to the discretion of the local magistrate. The faults of this system were glaring. Some judges were often biased in favor of local personages who might be brought before them, and whose displeasure, and consequent loss of political patronage, they would incur by meting out the limit of the law. Aldermen, prominent and influential members of the community, and important

"The privilege of signing his own bonds is appreciated after years of having to occupy a cell"

"Joy rides were being indulged in by reckless motorists, who by reason of their influence, were immune"

civil officials, were accordingly seldom punished for offenses of this nature, while strangers to some of the magistrates were made use of by these personages to make up the balance of justice it is claimed, so that the stranger fared hard indeed, often regardless of evidence. The police magistrates often were personally associates of the officers who made the arrests, and usually would take their opinions in preference to the word of the defendant.

Too much leniency was also accorded unwittingly by the scattered local judges, because their records were each kept separate, and entered in promiscuously with court records of every description; thus an old offender, if he did but exert sufficient discretion to avoid arrest in the same precinct twice, would always be accorded the leniency due for a first offense.

The mayor therefore was fully justified in his charge that speeders were meeting with undue leniency, as were on the other hand his hasty critics in charging that the methods of the municipal court were too severe, in many instances, and lacking in discretion.

Motor Court Established

Realizing that a mere increase in the amount of fines would not in any way affect the methods of the local courts, but would only aggravate matters by inducing them to increase the levy on the unfortunate stranger, in order to bring the aggregate amount collected in fines up to the figure demanded, without having any effect on the protected offenders, the authorities set themselves to the task of evolving a system of dealing with violators of the motor vehicle laws, that would combine justice and a square deal, with effectiveness in preventing reckless driving. Encouraged by the success met with, in the conduct of the new court of domestic relations, and acting partially on the suggestion of the local motoring organizations, the officials determined to apply a similar means of handling motor cases. Accordingly the first motor vehicle court in the United States was established in Chicago on June 5, 1912.

This court has exclusive jurisdiction

over state motor law violations, and over such cases only, except in cases where such charges are complicated. This court is presided over by Judges Stewart and Robinson. Another innovation, instituted at the time of the establishment of this court, is the discontinuance of the cash bond, formerly demanded of speed law violators. This was done in recognition of the fact that speeders are not to be classed with ordinary criminals, although as violators of the state statutes, technically criminals. Owners and drivers of motor cars are furthermore responsible parties, and the nature of their offense in overspeeding, is not sufficient, in the opinion of the framers of the new regime, to warrant the severities of the large cash bail formerly demanded.

New Motoring Bond

The new regulations require the defendant, being duly sworn in the presence of the local judiciary authority, to make an affidavit of individual responsibility, furnishing his personal bond for $500, upon which he is immediately released, under summons to appear in the motor vehicle court, at its next session. This is a distinct advance, and the fact that there have been but four forfeitures of these bonds since the inception of the court bears out the theory of its sponsors. The bond reads:

STATE OF ILLINOIS, }
County of Cook, } ss.
City of Chicago. }

..... who was arrested without warrant in the City of Chicago for ....., being first duly sworn, on oath deposes and says that the answers to the following questions are true as stated below:

1. What is your name? .....
2. What is your place of residence? .....
Telephone No. .....
3. What is your place of business? .....
Telephone No. .....
4. With whom do you reside? .....
5. What is your occupation? .....
6. If you are employed by anyone, by whom are you employed? .....
.....Telephone No. .....
7. If you have an employer, what is his place of business? .....
.....Telephone No. .....
8. If you are the driver of an automobile or other vehicle, give the correct name and home and business address of the owner thereof .....
.....Telephone No. .....

"Speedometer evidence must be attested by a certificate of inspection obtained weekly"

"Exerting sufficient discretion to avoid arrest in the same precinct twice"

9. What is the license number of the automobile or other vehicle that you were operating at the time of your arrest? .....

This affiant makes the foregoing affidavit in order that he may be released on his own recognizance.

Subscribed and sworn to before me this .....day.....of.....1912.

A fair trial is accorded before unbiased judges, whose aim is solely to reduce the number of violators of the state motor vehicle law, being accountable to the mayor for this result. The prisonor is given his choice between a trial by jury or without, and is given every opportunity to plead his case. His testimony and that of his witnesses is given equal credence with that of the police officer, and no testimony of the latter is accepted unless satisfactorily proved. Speedometer evidence must be attested by a certificate of inspection of the instrument, which is obtained of the maker weekly. Stop watches are subjected to the same requirements, and the defendant is given every opportunity to submit like evidence. No arrests are made for speeds of under 20 miles per hour, and as the state law permits no local speed ordinances, except in parks and on boulevards belonging to park systems, there is no restriction on reasonable driving.

Accurate records of all procedure are kept in a card index, a separate card for each defendant. These cards bear the name of the defendant, his address, his place of employment, his employer's name and address, the name and address of the owner of the car or motor cycle, the numbers of both state and city licenses, the dates of arraignment, the rate of speed at which the defendant is charged, his plea, the disposition of the case, other charges, injuries, the identity of the plaintiff, and the name of the judge. This provides a means of positive knowledge of the past record of the defendant, the card being before the judge at the time of trial, so that allowances may be intelligently made for first offense, and old offenders may be known.

Many Plead Guilty

The majority of offenders plead guilty, the number so pleading being estimated at 90 per cent. At the outset, fines were graded according to the rate of speed, but the speeders continued to plead guilty so readily, that at present Judge Robinson has resorted to more stringent measures. That his method has resulted favorably may be seen from the report of the court for June, just published.

On the first Monday of this court's history, sixty-seven cases were disposed of, and by the fifth, this number had dwindled to twenty. The siren song of the return of good weather, however, raised this to forty-four on the seventh, which, however, is rapidly being reduced, as the July report, which will appear in the middle of August, will show. Two hundred and seventy-eight cases were filed from June 5 to June 30, of which 242 cases were disposed of. Two hundred and fourteen fines were imposed, twenty-two cases were discharged, thirty-two cases were continued, four bonds were forfeited on nonappearance of defendant, and six were discharged on various discrepancies. Of the persons fined,

1	was fined	$ 5 and costs
7	were fined	10 and costs
2	were fined	25 and costs
25	were fined	30 and costs
1	was fined	35 and costs
59	were fined	40 and costs
98	were fined	50 and costs
1	was fined	60 and costs
13	were fined	75 and costs
1	was fined	80 and costs
5	were fined	100 and costs
1	was fined	200 and costs

The fines totaled $9,985, and the cost $663. Sixty-seven pleas of guilty were

Name John Doe
Residence 2548 X Street
Business Chauffeur
Employed by Richard Roe
Plead Guilty

Owner of Car Richard Roe
Residence 3894 Rose Ave
No. of State License 41986
No. of City License 23241

DATE	NUMBER	Rate Speed	DISPOSITION	Other Charges	Any One Injured	PLAINTIFF	JUDGE
13/35	18429	42	$ 75 4 C.	None	No	So. P.	Frank Fox
13/48	21743	72	$ 150 4 C.	Resistance	No	W. J.	Geo. Fox
14/3	22896	60	$ 250	Abuse of Office	1 Killed	City	Frank Fox
14/13	25601	120	$ 500 6 Mo	Disorderly Conduct	3 injured	N. Park	Frank Fox

Remarks Intoxicated on second offense — Crazy on Fourth.

SAMPLE OF CARD SHOWING RECORD OF OLD OFFENDER

entered, the average fine was $46.62, and the average costs amounted to $3.09. The rates of speed varied from 21 to 44 miles per hour, in the cases convicted, the average speed being 23 miles per hour. The cosmopolitan nature of the defendants may be seen from the following list, in which they are classified according to their occupations:

Agents	4	Liverymen	2
Attorneys	2	Machinists	14
Bakers	4	Manufacturers	6
Banker	1	Merchants	18
Barbers	2	Messenger	1
Bookkeepers	4	Milkman	1
Business agents	2	Musician	1
Brewer	1	Painters	2
Broker	1	Peddler	1
Bricklayer	1	Physicians	3
Carpenters	2	Plasterer	1
Cashier	1	Plumber	1
Chauffeurs	31	Porter	1
City employe	1	Printers	6
Clergymen	2	Principals of Schools	2
Clerks	20	Roofer	1
Clothing cutter	1	R. R. employes	3
Collector	1	Salesmen	14
Contractors	7	Steamfitter	1
Designer	1	Stenographers	4
Electricians	12	Students	5
Engineers	3	Tailors	3
Foremen	2	Teamsters	2
General managers	2	Tinsmiths	2
Grocer	1	Timekeeper	1
Horseshoer	1	Toolmaker	1
Housekeeper	1	Trust officer	1
Importer	1	Undertaker	1
Janitor	1	Waiters	2
Jeweler	1	Woodworkers	2
Laborer	1		

The claim is advanced for this court are that 90 per cent of the defendants plead guilty, which claim is not substantiated in the first month's experience, but which may yet be shown to be a fair estimate.

Regarding the slow speed of the average arrest, it has been charged that the low figure indicates that the high-speed drivers are still escaping, while the unfortunate, who just go over the limit, are the ones that are caught. In defense of this, the police authorities point out the fact that 30 miles per hour looks like 50 to the average observer, and one case of this speed impresses one more than a dozen at a slower speed. It cannot be denied, furthermore, that the condition of the pavement, even on the best streets, is not conducive to great speed, and with the number of crossings, other vehicles and street cars, few drivers have the hardihood to greatly exceed this average, which seems faster than the figures indicate, when witnessed, because of its rarity.

Although this court may be far from perfect, it is believed to be far and away the superior of any other judiciary institution that has yet been applied to offences of this nature, and with the coöperation of the police and legislative departments of the city, should exert a strong influence in decreasing the alarming number of fatalities resultant from careless driving.

That the police department is doing its part is evidenced by the work of the motor cycle squad, and the precautions taken to insure the accuracy of the speedometers used. The council also has done its part in this particular in the passing of cut-out, muffler explosion, and street car ordinances. The last named prohibits motor cars from passing to the right of street cars during stops of the latter to take on or discharge passengers. Violations of these laws are taken before the local judges, except when the charge includes violations of the state law also, when the case is tried in the motor vehicle court.

In cases where chauffeurs are given heavy fines which they are unable to meet, the court is disposed to be very liberal, allowing the cases to be continued, granting parole, and giving the worthy ones ample time to make payments without depriving themselves or their families of the necessities of life. In only extreme cases of recklessness or contempt, are these offender sent to the house of correction, although it is entirely within the power of the judge to exercise his own discretion in this particular.

Knight-Argyll Decision

English Court Decided Against Inventor of Slide-Valve Motor-Patent Not Invalidated, Judge Says, But Claim Is it Covers Only Reciprocating Motion

CHICAGO, July 31—A cablegram received today from London by L. B. Kilbourne, partner of Charles Y. Knight, inventor of the Silent Knight engine, conveys the information that the suit against the Argyll company has been decided adversely to the Knight interests, but that an appeal has been taken, with strong hopes of ultimately winning.

According to the cablegram, the decision was based upon the legality of the amendment made in 1908 to the first claim of Knight in 1905. The English judge hearing the case refused to read the claim as amended on the ground that the scope of the patent was widened thereby, which is denied by the Knight interests. It is stated that former practice always considered an amendment through the comptroller as final. The judge held that the Knight patent is not invalidated, but holds that it covers only the reciprocating motion. He gave Mr. Knight leave to amend the error in the specification. After consultation by Knight's lawyers, it was unanimously decided to appeal.

When the new Argyll single sleeve-valve engine made its first appearance at the Olympia show in London last November, proceedings immediately were commenced against Argyll, Ltd., by Knight & Kilbourne, alleging infringement of the British Knight patents granted in 1905. There are four claims in the patent of Knight & Kilbourne referred to, the first and last ones being those against which infringement is alleged. The defendants denied the infringement and set up the defense of anticipation and lack of novelty, and, in turn, claimed revocation of the plaintiff's patent. Among the expert evidence set up on behalf of the plaintiff was Dugald Clerk. One of the drawings in the Knight patent around which much of the discussion centered illustrated a motor in which the valve action was obtained by the reciproation of the cylinder itself and not through the use of the familiar Knight double sleeves.

It was shown in the court that in the drawing, when the valve motion was plotted out, the exhaust port opened on the compression stroke. The defendants claimed that the invention illustrated by it was unworkable because the ports did not register correctly. The plaintiffs argued that patent drawings were not intended to be working drawings, and the error was only that of drafting, and that it was such that any draftsman could set it right without difficulty.

NEW PLANT FOR STEGEMAN

Milwaukee, Wis., July 29—The Stegeman Motor Car Co., 1148-1160 Holton street, Milwaukee, manufacturing the Stegeman commercial vehicles, has leased the big manufacturing plant at Woodworth, Linus and Kinnickinnic avenue, Milwaukee, in the Bay View manufacturing district, and will at once increase the capacity to one truck per day or 350 per year. The work of removing the equipment from the Holton street works already has begun and will be completed by August 10. Considerable new machinery has already been purchased.

SIMMS COMPANY REORGANIZED

New York, July 30—The reorganization work of the Simms Magneto Co., Bloomfield, N. J., which was recently secured by the Assets Realization Co. and the active management turned over to C. G. Stoddard of the Edwards Motor Car Co., has been completed. The original capital of the company was $1,000,000, all common stock. The new capital is $1,750,000. The $750,000 new capital is made up of $500,000 preferred stock and $250,000 common stock all paid up.

This new financing program has wiped out all of the old debts of the company and provides a working capital of over $300,000, which, taken together with over $100,000 worth of stock now on hand, puts the company in excellent shape to pursue its work.

The organization is working slowly at the start, having now over thirty men on the payroll and adding more each week as the organization proceeds. R. C. Anderson, Racine, Wis., has been made general manager. He formerly was vice-president and general manager of a department of the Case company. At present two types of magnetoes are being produced, SU4 and

Lozier Has Reorganization

H. M. Jewett of Paige-Detroit Company, Succeeds H. A. Lozier as President—Output of Factory Will be Increased and a Small Six-Cylinder Model Added

SU6, one for four-cylinder cars and the other for six-cylinder machines. The development of two other types of instruments for four and six-cylinder motors will be taken up in the near future. The company will have its complete line ready for the 1914 market, it was announced in New York today.

In the new re-organization C. G. Stoddard is president, A. A. Fisher secretary and treasurer, and the three additional directors are Campbell Carrington, vice-president of the Assets Realization Co.; W. M. Kilborn, vice-president National City Bank, New York, and Frederick Simms, London, England.

FORD BUYS CHICAGO PROPERTY

Chicago, July 30—Announcement is made today that the Ford Motor Co. has purchased a lot 600 feet deep by 165 feet wide at the southeast corner of Thirty-ninth street and Wabash avenue upon which it proposes to erect a big assembling plant similar to the ones that are being installed in many of the large cities throughout the country. The property in question is immediately in the rear of the new building which is being erected by the C. P. Kimball Co., the body-building concern, and marks another movement of motor row to the south. As yet Manager Thomas J. Hay, of the Chicago branch of the Ford, is not ready to give out his building plans, but it is understood that not only will the assembling plant be located in the new place, but the sales end of the Chicago branch also will be in the same building. It is proposed to ship parts to Chicago from the Detroit factory and assemble the cars here for distribution through this territory. The location is considered admirable because it is so near the railroad tracks a spur can be run directly to the Ford plant.

MAIS PLANT FOR SALE

Indianapolis, Ind., July 29—Judge Joseph Collier of the superior court has authorized Franklin Vonnegut, receiver for the Mais Motor Truck Co., to offer the concern's plant and property for sale on August 19. It is thought the plant will be bid in by some of the present stockholders and a new company organized to continue the business. An appraisement of the property is under way and will soon be filed in court. Under the terms of sale, one-third cash must be paid at time of sale, one-third in 12 months and the remainder in 18 months. Deferred payments are to bear 6 per cent interest and be secured.

DETROIT, Mich., July 30—At a meeting of the directors of the Lozier Motor Co. held in this city on Monday, plans for reorganization which have been under consideration for some time were culminated. H. A. Lozier has resigned as president of the company and is succeeded by H. M. Jewett, of the Paige-Detroit Motor Car Co. Raymond B. Fosdick, of New York city, was made vice-president and treasurer, while E. P. Earle and H. E. Kahler, also of New York, were made members of the board of directors.

Arrangements have been made to increase the output of the factory, and while only one model, a six-cylinder, 50-horsepower machine, has been manufactured heretofore, it is planned to put out a smaller six of less horsepower, in addition. This will necessitate the increasing of production facilities, and consequent enlargements of the factory, so that it is probable the new car will not be ready for delivery for 2 months or more.

Mr. Jewett is closely allied with the affairs of the Paige-Detroit company, being president of that concern also, as well as head of the firm of Jewett, Bigelow & Brooks, wholesale coal merchants. Mr. Fosdick is at the present time commissioner of accounts of New York city and manages all the business affairs of that city. Messrs. Earle and Kahler are well known in the financial circles of the metropolis.

The policy of the Lozier company will remain unchanged by the reorganization. Mr. Lozier's resignation as head does not mean he has severed his connections with the company, as he will continue to take an active part in the concern's affairs. The rest of the Detroit organization remains unchanged.

KNIGHT'S EUROPEAN BUSINESS

Chicago, July 27—L. B. Kilbourne, partner of Charles Y. Knight, inventor of the sleeve-valve motor, is back in Chicago after a lengthy visit in Europe, some of which time was given up to attendance at the trial of the suit of the English Argyll company.

"Our business in Europe is growing in leaps and bounds," says Mr. Kilbourne. "The Daimler company, which made 2,600 Knight-engined cars for 1912, has made its plans for 3,000 for 1913. In addition it is selling many engines to others in that country. The Sidderley-Deasy already has used 450, fitting them to both fours and sixes, while a considerable engine business is done by Daimler in Germany, France and America. The Daimlers are making more six-cylinder cars than fours. In Belgium the Minerva people are erecting new factories and planning to increase their output from 1,200 to 2,000. Panhard of France has added a Knight six and also is making a small four, making three models of Knights in all, while the Mercedes company in Germany has brought out two new Knight models to go with the one it originally had. One of these is 4¾ by 5.

"The Sigma-Knight builders in Switzerland are at the present time reorganizing their company with the idea of broadening out. They started out with only the Switzerland rights and found they were handicapped by being so limited. They saw the opportunity to get the Italian rights and they have taken an option on this privilege, which will be taken up when the company is reorganized. One of those interested in the Switzerland company is young Levassor of France. The Sigma-Knight is made in two models, one 18 horsepower and the other 25½ and the car is a success.

"It was because of this reorganization that the Sigma did not start in the French grand prix. It is not generally known, though, that it did run in the Targa Florio in Sicily. An agent bought the car himself and entered it and it only was because of hard luck that he did not win. He writes that at the end of 200 miles he was 35 minutes ahead, when he lost his gasoline tank. He had to make a new tank and wait 2 hours for more gasoline, yet he finished tenth."

ATLAS SALE POSTPONED

Indianapolis, Ind., July 29—In the superior court today Judge Weir postponed the sale of the Atlas Engine Works to August 12. This was done with the consent of the receiver at the request of M. L. Thompson, representing a prospective bidder and the Baldwin Locomotive Works, Philadelphia, a heavy creditor.

Mr. Thompson said that the company which contemplates buying the Atlas plant has not yet been organized, but that the men who expect to go into it have ample funds to buy the property at a figure $25,000 higher than that offered by another prospective bidder, in which Walter E. Flanders, of Detroit, is said to be interested. It is understood the Detroit interests will still be willing to submit a bid as late as August 12, although they desire the plant at as early a date as possible.

Fred C. Gardner, receiver of the Atlas company, has completed an inventory and his appraisement is $1,135,723.77. The inventory and appraisement is made up as follows: Cash on hand, accounts and similar items, $234,905.40; buildings, $518,056.50; grounds $117,600; machinery, $351,845.13, and sprinkling and water system, $50,000.

The prospective bidder will have to agree to assume a bond issue of $1,050,000, pay another bond issue of $105,000 and pay mercantile accounts and the cost of the receivership proceedings amounting to about $80.000.

MOTOR AGE
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Proper Nomenclature Needed

THERE is grave necessity for more accurate nomenclature in the 1913 motors because of the use of electric motors for self-starting purposes and also because of the use of electric motor generators for generating electric current for lighting and often current for self-starting and ignition purposes. Here is an example of how much confusion can arise because of lack of uniform nomenclature for the various parts connected with the electric system of a car: One concern uses not fewer than three electric units, the magneto for ignition, an electric motor for starting and a motor-generator for lighting and charging the lighting and starting batteries. Many people use the word "motor" for three different parts: First there is the four-cylinder gasoline motor which drives the car, which it has been customary to designate as "motor" for many years and which is a suitable name. Granted that "motor" is the proper appellation for it, then it at once is evident that the word "motor" must be modified if used to designate an electric motor for starting or another unit which at one moment may be used for generating current and at another moment serves to consume current from a battery and transfer it into power to crank the gasoline motor.

A SUITABLE form of nomenclature would be as follows: Use the word "motor" to apply to the standard gasoline power plant of two, four or six cylinders; use the compound word "motor-generator" to designate an electric unit which works in conjunction with a storage battery and which draws current from the battery to start the gasoline motor or when the gasoline motor is running is driven by it and generates electric current which it delivers to the storage battery or direct to the lighting or ignition system; and use the expression "starting motor" to designate an electric or other type of motor which is used exclusively to start the gasoline motor only.

IT will be noted that the "motor-generator" is a two-fold machine; at one time it produces electric current and another time it consumes it. In electric parlance, when an instrument makes current it is a generator, and when it consumes current and gives forth mechanical power it is a motor, so that it is entirely satisfactory that a machine which can do both roles should be styled a "motor-generator." It is difficult to clearly outline the present field of these different units. The motor-generator on one make of car is used as a motor to start the gasoline motor and as a generator to charge a battery or lighting and starting. On another car the motor-generator is used solely for starting. A third concern uses but an electric generator, constantly driven.

Improving the Wiring

WHEN you build a garage in a large city it is necessary to refer every detail of the electric wiring to the insurance underwriters who put limitations on the height of plug sockets from the floor, on how the wires shall be concealed, on where switches must be located, on how drop lights shall be placed and many other details. Contrast this care with that shown in wiring a motor car for ignition, for electric lights and for electric starting. With many systems poor wiring has given more trouble than the current generators and other units in the system. There is an entire lack of adequate protection against water. Leave many cars standing out on the street in a heavy rain and the bonnet does not afford enough protection to prevent short-circuiting when the car is started. The severe snow storms of the past winter put out the electric and ignition sets on many cars and left them stranded on the street. In every instance it was short-circuiting, due to lack of protection. Many concerns fitting electric lighting outfits have placed the switchboards so that they are too close to the back cylinder and the heat is sufficient to cause shorts with their never-ending program of troubles. The defective wiring could be analyzed much further. The proximity of wires to the exhaust manifold and the muffler has caused scores of stops.

THE next conclusion is that there is much need for improvement in electric wiring on cars. Today it is one of the crudest systems in the car. A car is subject to constant vibration, yet the wiring is often much poorer than is done in the average house or office building where it is entirely protected from the weather, from heat and is not subject to vibration. For next year there has been a general improvement in the wiring schemes. Many makers are carrying their wires to the headlights, to the dash lamps, to the tail lamps, to the license tag and to the batteries in metal tubes so that water protection is afforded. More precautions have been taken in supporting these tubes on the chassis frame and in general more rational attention has been given to this question.

THERE is still much room for improvement. Makers who persist in placing the magneto on the front motor arm must give more protection from the radiator than they have in the past. This protection can be in the form of water and mud aprons on the front of the car to prevent the water splashing through the radiator or in the form of separate covers for the magneto and its wiring. One maker is going still further for next year by entirely inclosing the spark plugs on the cylinder heads with aluminum plates, making it quite impossible for water to leak through the bonnet and reach the plugs. This example should be carried much further.

Get the Habit

GETTING drivers in the habit of signaling with the hand when going to stop, when slowing up, when turning to the right or when turning to the left is difficult. In large cities the education has been rapid because the driver must use it for his own protection, but in the many medium-sized cities there is a conspicuous ignorance of such rules, and generally the drivers from such cities when they get into big centers run amuck with the police or other drivers because of disobedience to recognized signals. No matter what the city, the driver should accustom himself to such rules, and he can only get in the habit of such by continual attention to it in his home city or town. The car owners will work a great benefit to the industry if they will recognize this simple rule and many accidents will be averted.

Badgers Try Something Entirely New

Fort Atkinson Club Sends Out Party of 350 Boosting Good Roads

FORT ATKINSON, Wis., July 29—Something entirely new, and by the way, eminently successful, in the line of boosting the good roads movement in limited territories, incidentally advertising a city and its industries, was the motor caravan of the Fort Atkinson Automobile Association, which left the city of Fort Atkinson on Tuesday morning, July 23, covered 72.7 miles in a circle, and returned at 6 o'clock p. m., Tuesday. Sixty-six cars participated, the sixty-six drivers being members of the F. A. A. A. So productive of good was the tour that a second will be run on August 23, when a route south of Fort Atkinson and including Whitewater, Janesville and Edgerton, will be covered.

The tour was different from anything of the kind any motor club in the west, at least, has ever attempted. Outside of its striking originality, the fact that a club in a city of 3,250, having approximately 100 members out of a possible 126 owners, accomplished a stunt of this kind, has opened the eyes of the Wisconsin State Automobile Association officials as well as those of the Milwaukee Automobile Club, the largest members of the state body.

New Scheme Outlined

For the benefit of clubs throughout the United States who may be seeking for means to stimulate highway improvement spirit in addition to advertising their towns and inducing a stronger co-operation among members, it may be said that the tour was conducted under a set of rules formulated by the club's executive committee, and executed by a staff of officials, including a pathfinder and pilot, pacemaker, starter, checker and assistant checkers.

All cars were required to line up on the right side of Main street, Fort Atkinson, beginning at the starting line in front of the Hotel Fort, at 9 o'clock a. m. Each driver proceeded to the hotel lobby to draw his number from a box, which was exchanged for two squares of canvas, neatly painted with the corresponding number, to be attached over the hood. At 9:30 o'clock the starter, Gavin Coppins, told No. 1 driver to take the starting position. Immediately thereafter No. 1 was sent away, and as soon as the car reached the first street intersection, No. 2 was given the word, and so on until No. 66 was off. The cars were required to keep 300 feet apart on the road, and no car was permitted to overtake another unless the car in front became disabled. A schedule of 15 miles per hour obtained.

The caravan was led by President Joseph P. Specht of the Ft. A. A. A., who followed ½ hour behind the pathfinder and confetti car, in charge of G. E. Ward, and ½ hour behind the pilot and pacemaker's car, in charge of W. D. James, who officiated as general manager of the tour. Between the pacemaker and the president's car there ran a Garford 3-ton truck, carrying the Fort Atkinson military band. The truck is owned by the R. Heger Brewing and Malting Co., of Jefferson, Wis.

The rules required that each car carry at least one Fort Atkinson pennant, two United States flags, and if desired, one sign on each side of the car advertising some business or industry of Fort Atkinson, which is noted as a creamery, canning, sausage and farm implement city, not forgetting that it is the home of former Governor William Dempster Hoard, the best known practical dairyman in the country.

The itinerary was from Fort Atkinson to Jefferson, 6 miles; to Johnson Creek, 5 miles; to Watertown, 11 miles, and Oconomowoc, 13.2 miles. At Jefferson and Johnson Creek 5-minute stops were made for receptions by the business men. At Watertown the motor club, recently organized, joined with the Business Men's Association in extending a ½ hour welcome. Oconomowoc was the noon control and the Woodland Park hotel and grounds were thrown open to the tourists, who remained 2 hours. Following dinner, a tour of the Oconomowoc lake region was made, the famous Pabst stock farm, Ardmere duck farms and all of the big summer homes of Chicago and New York people being visited. At the duck farms the tourists saw the notable sight of 5,000 ducks on foot in one enclosure and 3,500 ducks just hatching out in incubators.

At 3 o'clock the cars were again lined up as at the start, and sent away in similar fashion, the route being through Golden Lake, Rome, Hebron and Bark River to Fort Atkinson, 37.5 miles. It is interesting to note that just before the tour was scheduled to start from Fort Atkinson a heavy rain set in, but every one of the sixty-six cars which signed entry blanks remained and continued through the entire tour.

Boom for Good Roads

The tour was called the Fort Atkinson A. A. good roads tour, which in itself served to attract wide attention, for the city is known as the most progressive in the way of highway improvement in the state of Wisconsin. It was here that the third annual Wisconsin State A. A. reliability tour, July 15 to 19, found the finest roads encountered in the 625 miles of the run; also the tour was stopped at Fort Atkinson for 20 minutes to be entertained by the F. A. A. A. and hear a stirring good roads address by the man who built the first improved highway in Wisconsin, ex-Governor Hoard.

There were 350 Fort Atkinson people in the tour. An indication of the interest displayed by cities en route is found in the fact that at the noon control the Woodland Park hotel issued special menu cards bearing the seal of the F. A. A. A. and a quotation from Governor Hoard on good roads.

Despite the rain and wet roads the Garford truck maintained a schedule of 12 miles per hour for the entire distance and incidentally showed what a benefit will result when roads are built so that motor trucks may travel without fear of being torn to pieces.

Coming Motor Events

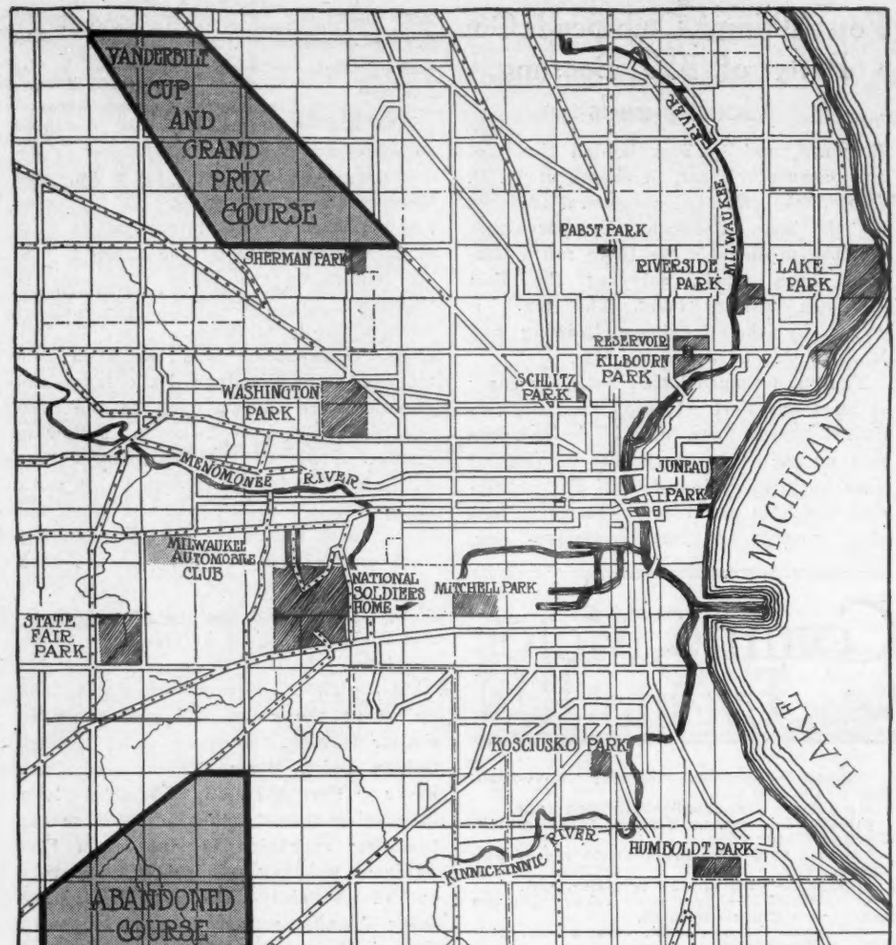
August 5-7—Pacific Highway convention; San Francisco, Cal.
August 8—Minneapolis-Winnipeg tour.
August 8-9—Banta trophy team match, Chicago Motor Club.
*August 8-10—Galveston beach meet; Galveston, Tex.
August 10—Hill climb; Whittier, Cal.
*August 30-31—Elgin road races; Chicago Automobile Club; Elgin, Ill.
*September—Commercial vehicle run; Chicago Motor Club.
September 2—Track meet at Winnipig, Canada.
September 3-6—Chicago Motor Club's truck demonstration.
September 17 — Grand Prix; Milwaukee, Wis.
*September 20—Wisconsin challenge and Pabst Trophy races; Milwaukee, Wis.
*September 21—Vanderbilt road race; Milwaukee, Wis.
September 17-20—Fire engineers' convention; International Association Fire Engineers, Denver, Colo.
September—Track meet; Universal Exposition Co., St. Louis, Mo.
*October 7-11—Chicago Motor Club reliability run, Chicago.
October 12—Track meet; Rockingham park, Salem, N. H.
November 6—Track meet; Shreveport Automobile Club, Shreveport, La.

*Sanctioned by A. A. A.

SHOWS

September 23-Oct. 3—Rubber show, Grand Central palace, New York.
September 26-Oct. 6—Exposition agricultural motor cars, Bourges, France.
November 8-16—Olympic show; overflow November 22-30 Agricultural Hall.
December 7-22—Paris salon.
January 4-11, 1913—Cleveland show.
January 11-18—New York pleasure car show; Automobile Board of Trade; Madison Square Garden and Grand Central Palace.
January 11-22—Brussels, Belgium show, Centenary Palace.
January 20-25—New York truck show; Automobile Board of Trade; Grand Central Palace and Madison Square Garden.
January 20-25—Philadelphia show.
Jan. 27-Feb. 1—Detroit show.
February 1-8—Chicago show.
February 10-15—Minneapolis show.
February 17-22—Kansas City show.
Feb. 24-March 1—St. Louis show.
March 3-8—Pittsburgh show.
March 8-15—Boston show.
March 17-22—Buffalo show.
March 19-23—Boston truck show.
March 24-29—Indianapolis show.

Milwaukee Chooses New Race Circuit



MAP SHOWING MILWAUKEE'S NEW AND ABANDONED RACE COURSES

MILWAUKEE, WIS., July 29—The four international road racing classics to be run at Milwaukee on September 17, 20 and 21, will use a course 8.2 miles long lying entirely within the township of Wauwatosa, Milwaukee county, instead of the much-touted Greenfield course, in the township of Greenfield, Milwaukee county.

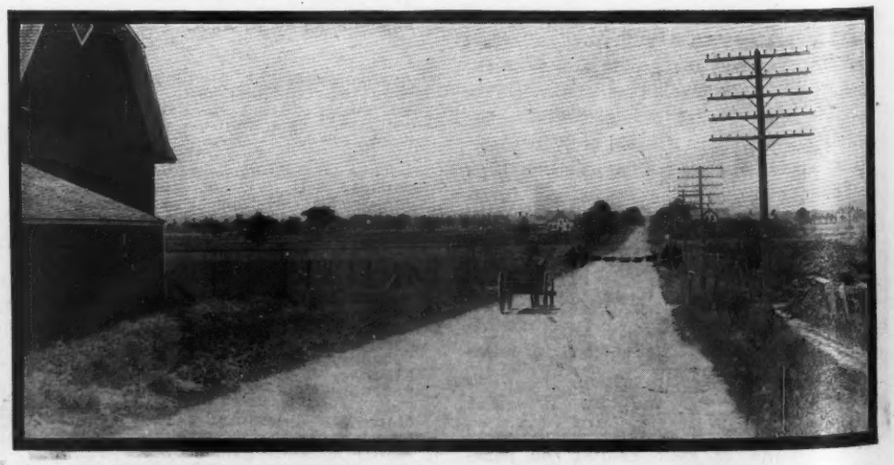
After 2 months of quiet preparation, the Milwaukee Automobile Dealers' Association, promoter of the great speed carnival, announced today that the Greenfield course was secretly abandoned on June 1, on which date the town board of Wauwatosa presented an offer to the association of an 8.2 mile course in its township, under the condition that nothing in relation to the new course be made public until the last and final details had been completed. The offer of the Wauwatosa board included the completed course, together with all property rights, for a period of 3 years, taking from the shoulders of the M. A. D. A. the entire expense of building the roads into shape for high speed, which amounts to approximately $2,000 per mile, or $16,500.

Greenfield Course Abandoned for One to be Built by Wauwatosa Township

The new course will consist of 2.5 miles of concrete road, with a 30-foot roadway, built under the direction of the state highway commission, with state aid. The rest of the road will be treated with a 70 per cent asphalt preparation. The turns, all of which will be rebuilt, will be of concrete, but the M. A. D. A. will be obliged to stand the expense, as the turns will be through private property excepting in one instance, and the plan under which the town board is building the road will not permit of the construction of special turns for high speed work at public expense.

The reason the new course has been kept so absolutely secret for nearly 2 months is that the M. A. D. A. wished to avoid the many harassing difficulties that confronted it almost as soon as announcement of the selection of the Greenfield course was made early in the spring. After signing up all but one or two of the property-owners and residing tenants, the M. A. D. A. believed everything secure when it was discovered that Chicago and eastern concessionaires were bidding for rights along the roads, and when the situation was investigated it was found that almost every foot of the course would be covered with peanut stands and soda water bars.

Just at this time Chairman Joseph M. Guentner of the town board of Wauwatosa approached the association with an offer to build a course and insure titles to every foot of ground bordering on the roads comprising the route, providing the association would keep it a secret until all details were completed. It was a most fortunate turn of affairs, and the offer was eagerly accepted. Two days later the town board had received the signatures of ninety-eight of the 101 property-owners along the



LOOKING NORTH ON OLD FOND DU LAC ROAD TOWARD START AND FINISH

SHOWING STRAIGHTAWAY ON NEW FOND DU LAC ROAD

course. Within a week every one had been signed up. On June 29 the contract for building 8.2 miles of concrete road was awarded to Michael Schmidt, a reliable contractor of Wauwatosa City.

The Wauwatosa course is a parallelogram, comprising the old Fond du Lac trunk highway, from the northwestern corner of the city limits of the city of Milwaukee to the point of intersection with the Town Line road dividing the townships of Wauwatosa and Granville. It runs in a northwesterly direction. At the intersection the course runs due west along the Town Line road to Sommerville, where it intersects with the new Fond du Lac road, which it follows in a southeasterly direction almost parallel with the old Fond du Lac road. At the intersection of Burleigh road, the continuation of Burleigh street in the city of Milwaukee, the course strikes due east to the old Fond du Lac road. The two Fond du Lac road straightaways are each approximately 3 miles long; the Town Line road measures approximately .9 of a mile, and the Burleigh road approximately 1.3 mile.

The Wauwatosa course is far superior to the abandoned Greenfield course in every particular. It is almost flat throughout its entire length. The old Fond du Lac road is a straightaway as flat as a prairie road and it is here where the highest speeds will be attained. The new Fond du Lac road is not so regular, but probably more so than the most regular part of the old Greenfield course. The connecting roads at the north and south ends of the course are somewhat rolling, but the grades do not rise above 7 per cent at any point.

There are two bad turns and two exceptionally good ones, as a glance at the map will show. The turn at Wanderer's Rest cemetery in the southwestern corner of the course, will have to be only slightly changed. It is a four-point cross-road, with rounded turns into each of the four connecting roads. The sweep from the new Fond du Lac road into the Burleigh road is one of approximately 145 degrees.

The Sherman Park turn, at the southeastern end, and the Sommerville turn at the opposite, or northwestern corner, are very sharp and the town board is cutting away through private property to make the round safe. The inside of the two turns barely measures 45 degrees. The Mud Creek turn at the northeast corner of the course is an easy one, measuring about 120 degrees. There are only two culverts on the course, Mud Creek cutting through the old Fondy road twice. These culverts are being rebuilt into real concrete bridges, measuring 40 feet from rail to rail. The course is free from railroad crossings.

LOOKING INTO WANDERERS' REST CEMETERY AT TURN FROM STRAIGHTAWAY

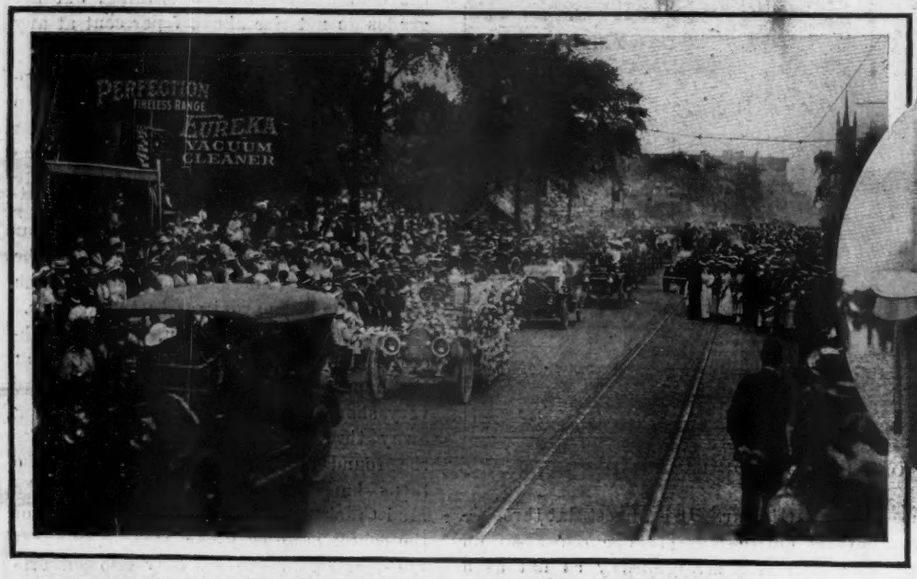
The location is ideal from a standpoint of accommodating the crowds. Two principal street car lines of the city of Milwaukee terminate at the two south corners of the course. They are fed by more than a score of trunk lines in the city limits. The main line of the Chicago, Milwaukee and St. Paul runs by the course, ½ mile from the east leg.

The north city limits of the city of Wauwatosa are but ¾ mile south of the lower end of the course, while the village of North Milwaukee lies ¾ mile northeast. The course touches the city limits of Milwaukee proper at the southeastern corner.

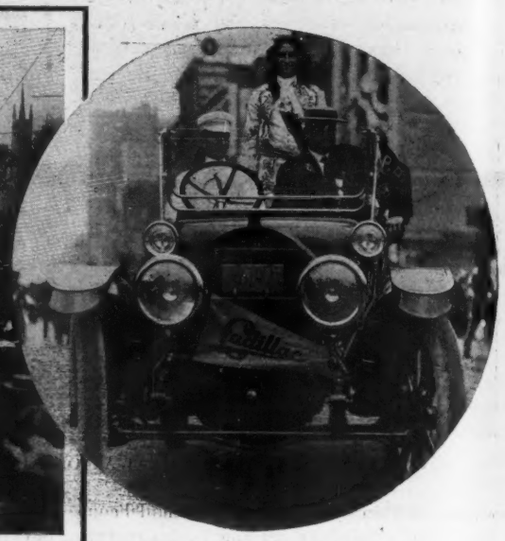
The clubhouse and grounds of the Milwaukee Automobile Club lies about 3 miles south of the course.

SHARP TURN FROM TOWN LINE ROAD INTO NEW OR SOUTH FOND DU LAC ROAD

Motor Important Cadillaqua Factor

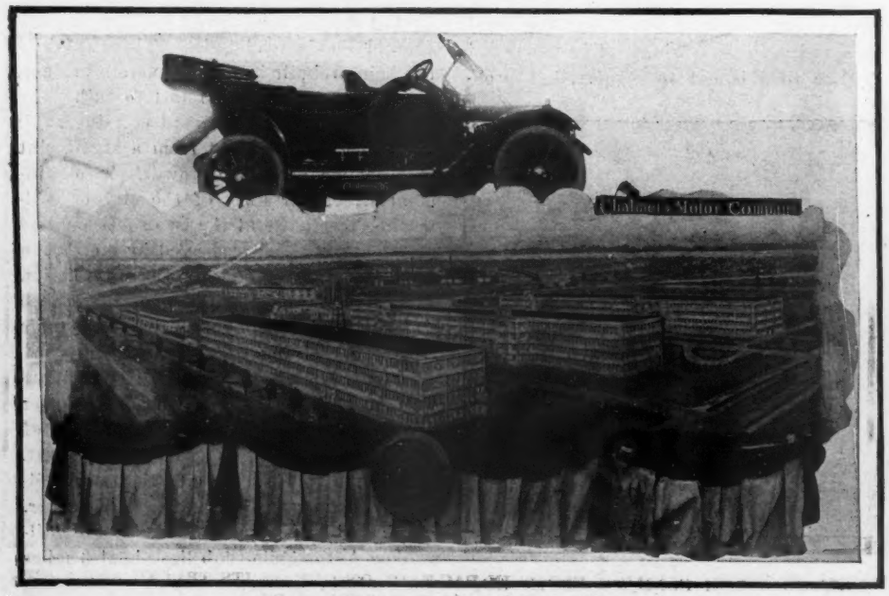


GENERAL VIEW OF CADILLAQUA MOTOR PARADE IN DETROIT



ANDREW GREEN, REPRESENTING CADILLAC

WINNING CAR IN CADILLAQUA PARADE



CHALMERS COMPANY'S FLOAT IN DETROIT PAGEANT

DETROIT, Mich., July 27—Detroit's birthday week, Cadillaqua came to an end last night, and during the festivities the motor car played no small part. On Wednesday afternoon, more than 5,000 motor cars paraded through the city's streets before a record-breaking throng. which completely lined the giant column's path along its entire length of about 5 miles. Starting from the corner of the Grand boulevard and Woodward avenue, the machines passed down the latter thoroughfare until Jefferson avenue was reached, where they turned east and wended their way to East Grand boulevard before disbanding.

Taken as a whole, this was perhaps the largest gathering of motor vehicles yet assembled, and gave the onlookers an idea of the vastness of the great motor industry of today and of the part the city of the lakes plays in that industry.

The parade had a number of novel features aside from the many gaily and beautifully decorated motor cars. While many single cars were gorgeously arrayed, no single section of the parade was so uniformly attractive as that of the woman suffrage workers. Each car carrying the suffragettes was decorated in yellow, while votes-for-women banners were in profusion. One of these machines was distinctly a creation in yellow and it carried six girls representing the six suffrage states. It was driven by a goddess of liberty.

Prizes were offered by the Wolverine Automobile Club, the organization which was responsible for the mammoth gathering of cars, for the best decorated machines. The first prize went to a most cleverly decorated electric which was all in white. White paper flowers completely covered its sides, while a giant

butterfly was suspended in front and appeared to be pulling the vehicle under the guidance of a large doll which held the reins. The two women occupying the car were also dressed in white to add a harmonious touch to the whole. The Jackson branch carried out the spirit of the affair by decorating one of its cars in old rose color. Paper flowers and leaves served to add to its attractiveness. One gaily bedecked machine was piloted by no less a figure than Uncle Sam himself.

The Detroit car factories were quite largely represented in the long column, the Studebaker Corporation carrying off the laurels for the greatest number of cars in line. Some thirty E-M-F test cars were entered, and were driven two abreast, each with its test number conspicuously displayed. Following these bare chassis cars, there was a large contingent of both E-M-F's and Flanders Twenties. The Cadillac, Hudson, Kirt, Jackson, Paige, Warren, Abbott, R-C-H, Hupmobile and Detroiter contingents were not far behind in numbers. The procession was led by the Detroiter car, because it is named for the city. The Lozier Vanderbilt cup winner of last year was also in line.

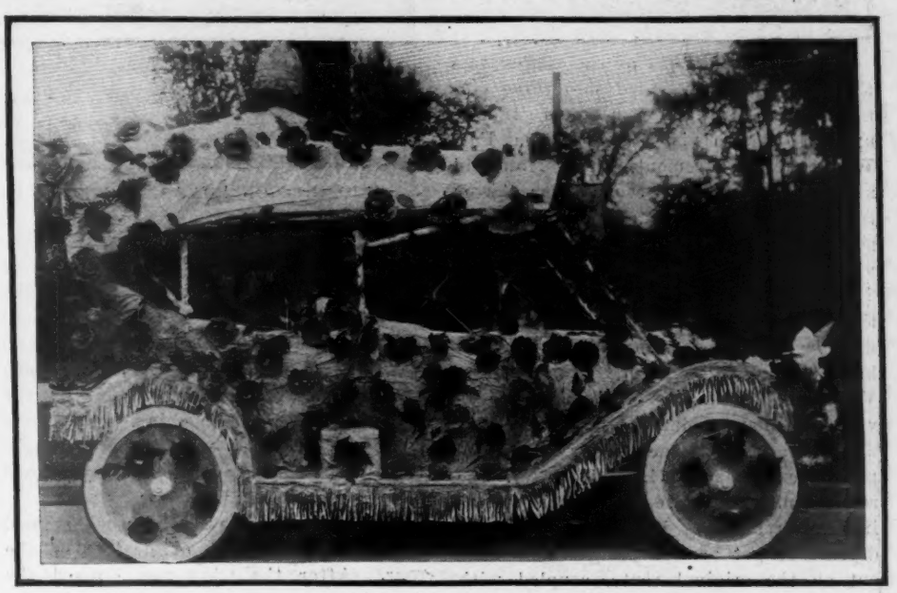
For suggesting Cadillaqua as the name for the great water fete, the president of the affair presented to W. E. Blaine a Flanders 20 touring car, which also was paraded by its proud owner and family.

Packard and Cadillac presented an interesting feature in entering a number of antiques in the parade.

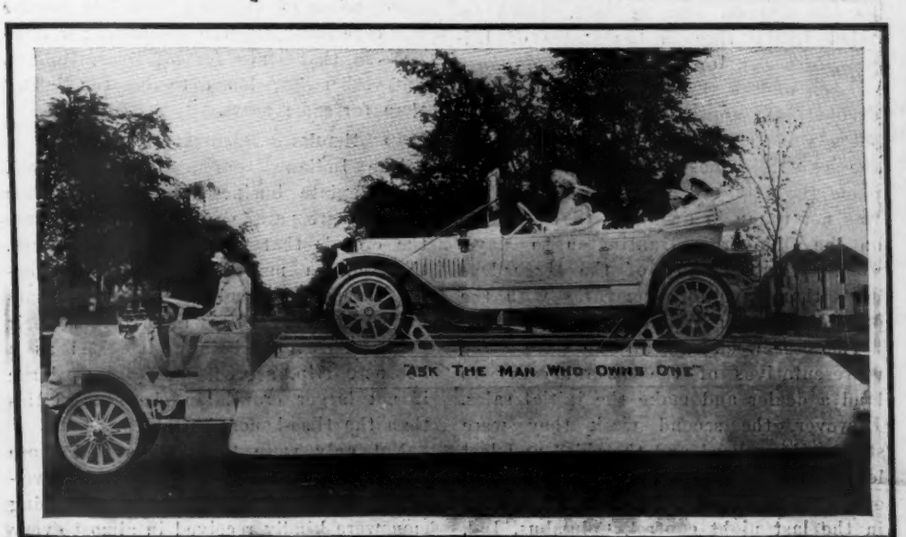
The motor car companies also were well represented in the historical pageant which took place on Wednesday evening. Of the twenty-three floats which made up the procession, ten were entered by the city's car factories, Packard, Cadillac, Chalmers, Studebaker, Warren-Detroit, and Flanders cars being represented. The Packard float was in white and gold, a phaeton model being mounted on top of a dais, the whole being carried on a 3-ton truck. The pleasure car was occupied by persons dressed in white as were those in the truck seat.

Partly concealed in a bank of clouds and surrounded by a number of gaily-dressed young women, the Studebaker car was the center of an attractive float. A spotless white float also was in line to represent the Cadillac concern, the car being mounted on top of a platform and the whole drawn by white horses. The Warren-Detroit float showed a number of workmen busy on the construction of a chassis. The Chalmers float carried one of the latest Chalmers models on top of a platform, the sides of which showed a model in papier-mache of the huge Chalmers plant. The windows of the miniature factory were lighted by storage battery carried within. The United State Tire Co.'s offering carried a huge map of the United Stated. The Flanders electric float was equally attractive.

THOUSANDS OF PERSONS LINE STREETS OF DETROIT TO WATCH PASSING OF MONSTER CADILLAQUA PARADE



JACKSON COMPANY'S DETROIT BRANCH HAD AN ENTRY THAT ATTRACTED THE ATTENTION OF THE SPECTATORS WATCHING THE PARADE



PACKARD COMPANY HAD A FLOAT IN PAGEANT ON ONE OF ITS TRUCKS AND CARRYING ONE OF ITS PLEASURE CARS

Hoosiers Well Pleased With Their Tour

Sixteen Days' Travel Through Four States Produces Big Results

INDIANAPOLIS, IND., July 29—Success far beyond the dreams of promoters or entrants marked the finish of the second annual Indiana four-states tour. After 16 days on the road the final hours of the trip were as marked for the good fellowship and sportsmanship of the entrants as was the getaway. Tired and weary, but happy in the knowledge that they had performed their mission and worked for the good of the entire industry, in other states as well as Indiana, the Hoosier tourists returned to their respective factories on July 26.

HOOSIERS ON BOAT GOING FROM HUNTINGTON, W. VA., TO MAYSVILLE, KY.

Tour in Three Sections

From the standpoint of the four-staters the tour may be divided into three portions—the first the run from Indianapolis to Akron via Kokomo, Peru, Fort Wayne, Lima, Fremont, Tiffin, Mansfield and Barberton; the second from Akron to Huntington, W. Va., via Canton, Massillon, New Philadelphia, Wheeling, Zanesville, Newark, Columbus, Chillicothe, Portsmouth and the river cities from that point to Huntington; the third and final leg, Huntington to Indianapolis, via boat to Maysville, thence to Lexington, Versailles, Frankfort, Shelbyville, Louisville, Seymour, Columbus and Franklin.

The original mileage as clocked by the pathfinders was 1,224.8. However, the road conditions caused by much repairing and rebuilding in Ohio and several detours to get around bridges that were out on the original route, coupled with two detours to take in cities not on the route, placed the final mileage at 1,423 miles. This is almost the same mileage as the original tour in 1911, which totaled 1,431.9 through the states of Illinois, Missouri, Iowa and Indiana.

Each of the three legs of the tour is divided into approximately 500 miles, as there was 109.6 miles of the route that the cars did not follow which would place the total mileage at 1,532.6. This was not taken in owing to the boat ride on the Ohio from Huntington to Maysville. However, any of the three legs more than favorably compares with the other for business results.

The first week saw all the sales force representatives of the several eager to land a dealer and make the initial sales. However, the second week they were still working hard and the third and last leg of the trip also brought results for one company reported closing an agency in the last night control, Columbus, Ind.

The possibilities of the tour only began to unfold to the entrants as the end of the trip drew near. Some of them did not seem to waken to the fullest until the Ohio was crossed at Wheeling. The competition to land dealers and give demonstration was very keen. However, with all the rivalry the tour was free from knocking, truly a rare condition, and men who formerly fought tooth and nail were willing to say a good word for each other.

The agents in the second week seemed to be the livest set of dealers of the tour. After the Ohio was crossed the second time and the third leg of the journey begun the dealers seemed more apathetic than those of Ohio. Almost 1,000 miles of the trip was laid in the Buckeye state and the prospects for business in that state for all lines, Indiana and otherwise, looks to be far better than for some years.

Trip Stimulates Business

The Indiana four-states tour seemed to stimulate business, for it is seldom that a mere parade of cars would attract the crowds that the tour did. In fact, the Indiana manufacturers by awakening interest in touring and motor cars have put the entire industry in their debt. This tour being advertised as a boosting trip, seemed to draw as large if not larger crowds in the small cities than the time-honored Glidden.

Not only were the dealers and those directly interested in the venture welcome the tourists, but the advertising men were kindly received in almost every city. Only one city did not favor the tourists from a newspaper standpoint. During the trip of 16 days the newspapers in Indianapolis and along the route published 100,000 agate lines or approximately 500 full pages of reading matter referring to the tour.

While some of the companies did not make as pretentious efforts to obtain business as others, every one of the companies represented expressed themselves as gratified with the results. Many of these now have road men covering the territory on both sides of the route, calling on the prospective business gleaned during the tour by the company representative.

Experiments Tried

An experiment tried this year was the shortening of the runs each day that the men might not grow tired so quickly. Several times the tour did not leave the night control until noon the next day and often they left early and arrived in the next night control before noon. This met with the approval of some and the disapproval of others, as some hold the shortening of the time and the lengthening of the daily runs would be more conducive to success.

The parking of the cars drew large crowds. However, many of the entrants objected very strenuously to this, owing to the fact that they were on a business trip and desired the car for demonstrations. This must be thrashed out previous to the next tour.

Road conditions were fair. In fact, unless the tour was laid in the east it is hardly probable that as uniformly

Makers Prepared to Reap the Harvest

FINISH OF FOUR-STATE TOUR AT COLUMBUS CIRCLE, INDIANAPOLIS

Already Traveling Men Are Out Looking Up Prospects Developed

good roads could be found anywhere in the country west of the Alleghanies. Many of the roads in northern Ohio were dirt. Central Ohio with the old National pike provided rather rough going for the motor cars. Southern Ohio and the strips in West Virginia were good. The Kentucky roads of blue limestone were the best of the entire trip. The Zanesville and Maysville pike which extends across the Ohio to Lexington was a little rough until Millersburg was passed. From this point to Lexington, 27 miles, the road was a rock boulevard as smooth as any driveway in a metropolitan park and a speed of 50 miles an hour was delightful riding.

Some Bad Roads Found

While they were engaged in spreading the gospel of Indiana-made cars, the Hoosier could not but be ashamed of road conditions between Seymour and Louisville. Here were the real heart-breakers of the trip. The straight road is almost impassable 9 months in the year and even by detouring for 25 miles road conditions were far from ideal. For 15 miles south of Salem, Ind., the tourists found a rough dirt road full of loose rock and chuckholes. The cars and heavy trucks showed the stamina by withstanding the sudden strains, but several windshields were broken on this stretch of bad roads. From Salem to Seymour there is one stretch of heavy sand from 6 to 10 inches deep and nowhere else on the route did the cars get the strain that was put on them in these few miles while nearing home. It is safe to say that the Indiana Automobile Manufacturers' Association will have something to say about good roads in Indiana when the legislature meets next winter.

Cordial Welcomes Everywhere

From the first to the last the Hoosiers were almost without exception cordially received. In Lexington the motor club had provided quite a reception, but as the tourists were more than 3 hours late, the plans were not carried out. As a tribute to H. O. Smith, president of the Premier company, the tourists left the beaten trail on the way out of Lexington after visiting the home of Henry Clay and wended their way to Versailles. This is the birthplace of Mr. Smith and the oldest city in Kentucky, being established in 1790.

The Louisville Automobile Club entertained the tourists and also were able to have the Kentucky and Indiana bridge between Louisville and New Albany closed long enough for the tourists to cross in a body. Seymour, being the largest city in Jackson county and famous for its melons, gave the homecomers a big spread. A large table was erected in the McCoy-Thompson garage and the khaki-clad travelers spent an hour sampling the luscious fruit served by Seymour's fair daughters.

On arriving at Columbus the tourists were greeted by Frank E. Smith, of the Maxwell plant at Newcastle, the president of the Indiana Automobile Manufacturers' Association. This was a surprise, for when the tourists started out the president was confined to his home with a fractured kneecap. It was a rare treat to meet the executive head and to find him driving his own car despite his injury. At Columbus the women of the Presbyterian church gave a benefit chicken dinner that night to raise money to build a manse and the tourists, clad in their khaki, attended in a body.

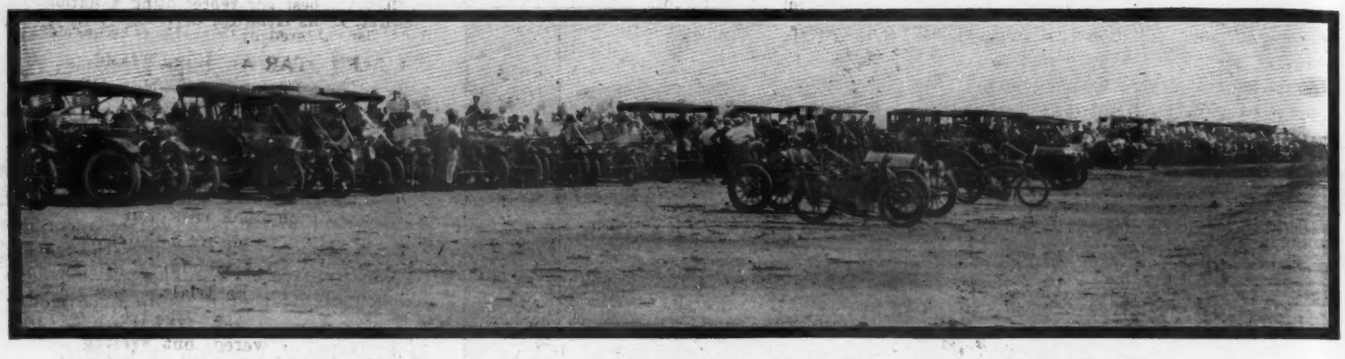
The homecoming was auspicious. All the commercial bodies in the Hoosier capital city bid the gasoline missionaries welcome. That night they joined hands with the motor interests and spread a banquet for the returning tourists at the German house. The customary expressions of good will marked the occasion, but underlying this was a spirit of exultation that Indianapolis and Indiana had put forth an effort that was accomplishing good for all, both manufacturers and dealers.

In parting it might be well to say something about the cars. Out of the twenty-four pleasure cars to start every one finished and all in good repair. The cars had been washed frequently and as most of them were finished cars, they did not show the wear that would seem unavoidable in a trip of this length. No serious accidents marked the trip. True, the mascot, "Der Uhnder Schlung Hund," broke his leg on the boat trip and was put ashore at Portsmouth and left to the tender mercies of a veterinary, and C. E. Henderson, of the Nyberg company, while seated on the door of the tonneau preparing to put up a road marker, was thrown on an abrupt turn in Kentucky. Mr. Henderson escaped from the accident with a sprained ankle and some scratches.

Work of the Trucks

Four heavy-duty cars made the trips, the Nyberg 3-ton truck and the Service 2-ton trucks being the heaviest cars. Both of these finished in Indianapolis with the pleasure cars. The Premier prairie schooner was converted into an ambulance and also carried baggage. The wonder of the whole trip was the Whitesides 2-ton truck. This car built in Newcastle and accompanied by Colonel V. F. Whitesides, its designer, was always the last car to leave any control. The truck carried a piano and six men and was able to make a speed of from 25 to 30 miles an hour on the road and maintain it every day. The truck, despite the cries of the wiseacres, finished in good repair and withstood the wear and tear of its capacity load and the excessive speed over rough roads.

Elgin Road Race Field Grows in Size



CHICAGO ORPHANS AND OLD PERSONS LINED UP IN GRANT PARK AWAITING START OF TRIP

CHICAGO, July 30—Whereas a week ago the Chicago Automobile Club only had two entries for its road races at Elgin August 30-31—Marhoefer in the Falcar in the Aurora cup and Bruce-Brown in the free-for-all—the count this morning showed fifteen, with enough in each of the four races to make contests possible. The list included four Mercers, four Stutzes, two Schachts, Benz, Ohio, Falcar and Bruce-Brown's mount, which has not as yet been named.

In addition to this an effort is being made to bring over Georges Boillot, winner of the French grand prix, and his Peugeot. E. C. Patterson, a member of the Chicago Automobile Club, has cabled an offer to the Peugeot makers, which it is thought they will accept, the Chicagoan agreeing to finance the expedition and not only start the car at Elgin, but also put it in the Vanderbilt and grand prix at Milwaukee. Entries also are expected from Ralph Mulford, Ralph de Palma, Joe Horan, Louis Disbrow and several others. In fact, right now it looks as if there will be from thirty to thirty-five entries in the Elgin meet. As it stood today, the entry list reads:

AURORA CUP, 231-300 CLASS

Car	Driver
Falcar	F. Marhoefer
Mercer	Not named
Mercer	H. Hughes
Ohio	John Ralmey

ILLINOIS CUP, 301-450 CLASS

Stutz	G. Anderson
Stutz	Merz or Zengel
Schacht	B. Endicott

ELGIN NATIONAL, UNDER 600 INCHES

Stutz	G. Anderson
Stutz	Merz or Zengel
Mercer	H. Hughes
Schacht	B. Endicott

FREE-FOR-ALL

Not named	Ralph Mulford
Not named	D. Bruce-Brown
Benz	Erwin Bergdoll
Mercer	H. Hughes

A conference between the Chicago Motor Club officials and the Elgin National Watch Co., donor of the Elgin National trophy, has resulted in the temporary transfer of the cup to the Chicago Automobile Club, which is given the racing rights to the trophy for this year. The deed of gift will be changed to permit of non-stock cars competing.

Bruce-Brown, Mulford and Bergdoll Among Those Nominated

Work on the course starts this week and the circuit is in such good condition right now that it is expected the road can be put in racing shape and oiled by the middle of August.

ANOTHER GRAND PRIX NEXT YEAR

Paris, July 16—Satisfied with the result of the grand prix run at Dieppe, the Automobile Club of France has already decided to hold another big race next year. As in the case of the 1907 grand prix at Dieppe, it will be run under a fuel consumption basis, the allowance being 20 liters per 100 kilometers, being at the rate of 14.1 miles to the gallon. A minimum weight of 1,763 pounds is imposed and a maximum of 2,204 pounds with tanks empty and no spares on board. The distance of the race will be about 560 miles, to be covered on 1 day, this being a longer distance than is usually imposed for a single day's race.

There is no limit to the number of cars that may be entered by any one firm, while the fee for each will be $800. If a minimum of forty cars is not received by November 1 the race will not be held. With a view to making the race more spectacular than usual, the racing board has decided to run on a course of 28 to 38 miles round, compared with a course of practically 48 miles at Dieppe. Offers of a racing circuit have been asked for, it being stipulated that the center of the course must not be more than 120 miles from Paris. This does not necessarily eliminate Dieppe, but it makes it necessary to find a fresh set of roads in the neighborhood. There are numerous other districts within a radius of 120 miles of Paris capable of providing a good set of roads, but it is doubtful if there is any one capable of giving the same financial assistance as the town of Dieppe.

The decision to limit the size of motors by restricting the fuel supply meets with a certain amount of criticism in technical quarters. The main advantage is that it will cause very close attention to be paid to carbureters and fuel economy and with the ever-increasing cost of gasoline this is a valuable feature. Against this must be set the additional complication in the holding of the race and the element of chance which is admitted by reason of a slight miscalculation in the gasoline consumption of the motors.

The experience of 1907 was conclusive on these two points. Measuring the gasoline of a uniform specific gravity to all the racing cars was a delicate operation, and in the race itself it was found that there were cars with a consumption rate rather too high and others with a consumption rate rather too low. The French, indeed, are convinced that they lost this race to Italy by a fluke in the weather conditions for which their best cars were not prepared. Restricted fuel may add to the excitement of the spectators by leaving them prepared for a stoppage of the leader within a few miles of home, but it does not add to the peace of mind of the drivers and manufacturers.

In all probability the cars taking part in the 1913 French grand prix will be only slightly inferior in cylinder area to the Peugeot which won this year. They will, however, be smaller than the racers of 1907, for on that occasion the fuel allowance was 30 liters of gasoline per 100 kilometers. Despite the reduction in cylinder area, speed is not likely to be decreased, and comparatively light cars running 14 miles to the gallon will be capable of averages of 70 miles an hour over a distance of 500 to 600 miles.

DISBROW AT GRAND RAPIDS

Grand Rapids, Mich., July 30—Before a monster crowd here last Saturday, Louis Disbrow, in his Simplex-Zip, broke two local records, established by de Palma, at the Comstock park mile circular track. Disbrow made 5 mile in 4:34.10 and 10 miles in 9:08.98. The previous records were: 5 miles, 4:50; 10

miles, 9:22. The meet was under the auspices of the Grand Rapids Automobile Club and had the sanction of the A. A. A. Joe Dawson and his big National car were to have been features of the meet, Joe being here to advertise motion pictures of his record race which are being produced at a local picture house. He and his car were to have appeared on the track and he was to have been introduced to the crowd. But at noon, shortly before the race meet was begun, the local race officials received notice from the A. A. A. officials in New York that Dawson had been suspended by the A. A. A. because he participated in an unsanctioned meet at Memphis, Tenn., recently. Although the crowd yelled for Dawson the announcer decided he wouldn't take chances on incurring the wrath of the A. A. A. by introducing him. Dawson's explanation of the Memphis affair is that he supposed the meet had the sanction of the A. A. A.

At any rate the race meet was one of the finest ever held here and certainly drew a record crowd. The results, outside Disbrow's record smashing, were as follows:

Time trials, 1 mile—Louis Disbrow, Jay-Eye-See, :58.41; Heine Ulbrecht, Case White Streak, 1:01.32; Bill Endicott, Schacht Tornado, :59.54; Joe Nikrent, Case Bullet, 1:02.04.

Five mile—Joe Nikrent, Case Bullet, won; Bill Endicott, Schacht Tornado, second; Heine Ulbrecht, Case White Streak, third. Time, 6:05.69.

Australian Pursuit Race—Disbrow, Simplex-Zip, won at end of fourth mile in 10-mile race.

Exhibition mile—Disbrow, Jay-Eye-See. Time, :57.97.

Five mile handicap—Disbrow, Simplex-Ziz, won. Time, 5:34.89.

One mile exhibition—Disbrow, Simplex-Zip, :53.59.

RESULTS AT WILKES-BARRE

Wilkes-Barre, Pa., July 29—Saturday's race meeting on the ½-mile track at the driving park was interesting to the good crowd that assembled. Dust was prevalent once more, just as it had been at the former meetings, despite the efforts of the promoters to lay it. Whalen's National was hard to beat in the races in which it was entered, in fact it cleaned the boards on several occasions. The Mercer pair, Buick and E-M-F, made excellent showings.

Summaries:

Three miles, non-stock—Williams, Buick, won, 4:21½; Billy Burke, E-M-F, second; Douglas, Ford, third.

Five miles, non-stock—Ringer, Buick, won; 8:09½; de Palma, Mercer, second.

Five miles, non-stock—Whalen, National, won, 7:08; John de Palma, Mercer, second; Ringler, Mercer, third; Weston, Buick, fourth; Kniffen, Buick, fifth; Freitag, Marmon, sixth.

Five miles, non-stock—Whalen, National, won, 7:05; Ringler, Mercer, second; John de Palma, Mercer, third.

Ten miles, non-stock—Whalen, National, won, 14:05⅘; Ringler, Mercer, second; de Palma, Mercer, third.

One-mile exhibition trials—Walen, National, 1:18¼; John de Palma, Mercer, 1:23.

Five miles, handicap—Billy Burke, E-M-F, first; de Palma, Mercer, second.

BURMAN AT ROCHESTER

Rochester, N. Y., July 29—Bob Burman was awarded the Remy brassard and trophy here Saturday afternoon at Crittenden park in a Blitzen Benz when he made 1 mile in 1:29, crossing the tape several yards ahead of Elmer McDonald in a 110-horsepower Benz machine, followed by H. Kyle in a White car. Burman was victor in every event in which he entered, having withdrawn in the seventh and final event in favor of Billy Knipper, of Rochester. In the third event Burman made 1 mile in 1:08 in his Blitzen Benz.

Summaries:

Three miles—Bob Burman, Cutting, won; H. Kyle, White, second; Sutton, Schacht, third; Almy, Selden, fourth. Time, 3:31.

Two miles—Bob Burman, Blitzen Benz, won; Elmer McDonald, Benz, second; H. Hickman, Mercedes, third; H. Kyle, White, fourth. Time, 2:35.

One mile for record—Bob Burman, Blitzen Benz. Time, 1:08.

Three miles—Bob Burman, Cutting, won; H. Kyle, White, second. Time, 4:09.

One mile—Bob Burman, Blitzen Benz, won; Elmer McDonald, 110-horsepower Benz, second; H. Kyle, White, third. Time, 1:29.

Two miles—Billy Knipper, 110-horsepower Benz, won; H. Kyle, White, second; Schaubert, Cutting, third; Sutton, Schacht, fourth. Time, 3:10.

SEATTLE'S BIG PARADE

Seattle, Wash., July 27—Magnificent beyond anything ever staged before in Seattle was the decorated parade held in Seattle during the Golden Potlatch of 1912. Two hundred cars of many makes moved in the line. Perhaps the finest showing ever made by an organization in the Queen City was that of the Arctic Club. Forty cars moved two abreast. To the right it was red poppies against fir and cedar; to the left yellow poppies against fir and cedar. Each woman carried red or yellow parasols, matching the color scheme. Each car was bound to the rest by broad streamers of red and black bunting, keeping the formation perfectly throughout the route. The awards were as follows:

Class A, covered touring cars with floral decorations—First, Mrs. Joseph Blenthen; second, Mrs. Joseph Bachrach, of Tacoma; third, Mrs. James Shute.

Class B, open touring cars with floral decorations—First, A. Hambach; second, Frank McDermott; third, B. L. Swezea; fourth, G. W. Fisher; fifth, Michael Farles.

Class D, open roadsters and runabouts—First, George W. Miller; second, P. A. Hathaway.

Class E, electric cars—First, Lena W. McCoy; second, Mrs. Charles E. Patten; third, Broadway Auto Co.

Class H, typifying progress: Part 1, modern transportation—First, L. W. McCoy; second, Seattle Automobile Club; part 2, Seattle spirit, Times Printing Co., first; Chamber of Commerce, second; part 3, most popular present day amusements, first, Packard Motor Co.

Class I, best procession of cars representing a club—Arctic Club with forty cars. No. 24 in this line was given a cup as the best car in the class.

Class K, best procession of cars representing make—Studebaker car with twenty-two in line. First prize for individual car to Mrs. Elliott; second individual car, Mrs. T. A. Johnson; honorable mention, Miss Janet Gray.

Class L, best car representing a nationality—First, Louis Hemrich, Germany; second, Norway Car, entered by Mrs. M. G. Huitfeldt.

WHALEN STAR AT SCRANTON

Scranton, Pa., July 29—Neil Whalen in a National proved to be the star of the race meeting held on the ½-mile track of the Minooka driving park Wednesday. The combination won the 3 and two 5-mile events for non-stock cars, but was beaten in the handicap race by a Buick driven by Williams. A fair attendance, estimated at 1400, witnessed the trials. Williams also won two other events. The track record of 1:08 was not lowered, but Freitag driving a Fiat turned the course for a mile in 1:14.

Summaries:

Three miles, non-stock—Williams, Buick, won, 4:32⅖; Douglas, Ford, second.

One mile, exhibition trial—Freitag, Fiat, won, 1:14; Whalen, National, second, 1:20.

Five miles, non-stock—Williams, Buick, won, 6:30; Ringler, Mercer, second.

Three miles, non-stock—Whalen, National, won, 4:06; Freitag, Marmon, second; Williams, Buick, third.

Five miles, non-stock—Whalen, National, won, 6:52; Williams, Buick, second; De Palma, Mercer, third.

Five miles, non-stock—Whalen, National, won, 6:32; Williams, Buick, second; Weston, Buick, third.

Free-for-all, handicap, 5 miles—Williams, Buick, won, 6:06; Whalen, National, second; Freitag, Fiat, third.

CHICAGO'S ORPHANS' DAY OUTING

Chicago, July 27—More than 1300 children and old persons were given their annual outing Thursday by the Chicago Automobile Trade Association, Chicago Motor Club and Chicago Automobile Club, eighteen institutions being represented. Unfortunately twenty of the 200 cars promised failed to make good, the result being that probably 100 children had to stay at home. The outing consisted of the usual ride around the boulevard system.

ELECTRIC PATHFINDER STARTS

Detroit, Mich., July 30—The pathfinding Flanders electric leaves here tomorrow to lay out the route through Indianapolis, Louisville, Memphis, Nashville, Jackson, Miss., and Baton Rouge to New Orleans for the A. A. A. tour which leaves from this city in October.

CHICAGO ORPHANS PREPARING FOR ANNUAL OUTING

Twenty Farmers Make Perfect Scores

DALLAS, Tex., July 30—The tour for the farmers and ranchmen of Texas conducted by the Farm and Ranch Publishing Co. ended here Saturday morning with twenty of the twenty-six starters having perfect scores. The Holland trophy was awarded to W. H. Camp, of Milan county, who drove a Reo. Mr. Camp showed his sportsmanlike spirit by offering to put up the cup for a similar contest next year.

In addition to Mr. Camp the following also made perfect scores: W. R. Bishop, Franklin six; S. J. Hall, Hupmobile 32; J. M. Howe, E-M-F; W. R. Mickle, Chalmers; J. R. Pennington, Buick; R. B. Dunn, Mitchell; B. W. Bean, Studebaker; D. W. Rutherford, E-M-F; O. L. Sims, Overland; J. Mantel, Hudson; H. V. Kendrick, Buick; W. R. Newton, Ford, and R. G. Roach, Ford.

The tour extended over more than 700 miles of Texas territory. Leaving Dallas Monday morning, the turning point was San Antonio. This place was reached Wednesday afternoon and the contestants spent the night in that city, beginning their trip home on Thursday morning. No mishaps occurred to any of the contestants and the tour is declared to be the most successful ever held in Texas. As a result of this tour it is expected that the motor car hereafter will be put to further use in Texas, farmers seeing the advantage in using cars for the farm.

At the banquet given on the return, George W. Baker, president of the Dallas Automobile Club, declared that the tour had done more, in his belief, for the motor industry of the South than anything that had ever taken place. He declared that hereafter, in his opinion, Texas would begin the building of more good roads. He stated that the farmers and ranchers' run had done more to advertise Texas and prove the sterling worth of the Texas motor industry to the world in general than any other event ever staged. He spoke of the worth of the tour in regard to the establishment of good roads in Texas. He said that on some parts of the trip the roads were fine, but that in the majority of places the going was rough in the extreme. Mr. Baker's remarks were indorsed by the contestants.

Mayor Holland welcomed the tourists back to the city and said that the tour had been of great value to Dallas generally.

There probably never has been an endurance run that contained so many unique features of special interest as this one. Only farmers and ranchmen operating and living on their own farms were eligible for this contest, thereby eliminating any professional element and adding a spirit of sociability that would have been impossible in the conventional endurance run.

Texas Ranchmen, in Reliability Run, Prove They Are Good Drivers

Many of the farmers brought their wives and families along and it was no unusual sight at controls to see a wife or daughter filling a gasoline tank while the son stood ready at the crank, with the farmer at the wheel ready to be off on the day's run without a moment's delay.

The run showed that the farmers were certainly resourceful in handling emergencies that would have discouraged most city drivers. For instance, R. G. Roach in a Ford sheared the bolts off of one of his rear wheels while rounding a sharp turn in the road. The wheel bounded off into a field. Mr. Roach borrowed the bolts off of a cultivator from an obliging farmer, assembled his wheel and landed in night control ahead of schedule. Another farmer who had smashed his gearbox made a temporary repair with a few yards of barb wire and a packing of axle grease. The average farmer owner is used from necessity to working out his own repairs independent of garage help and there are few mechanical difficulties that can stump him.

At every little or big town along the route squads of cars headed by officials came out to escort the advance guard into town, and noon and night controls were invariably the scene of receptions, barbecues and enthusiastic good roads meetings. These meetings were addressed by some of the best known educators and good roads advocates in the state and undoubtedly these assemblies will have a strong moral effect in bringing into line the counties that have hitherto been backward in voting for road improvement.

GENERAL MOTORS PROSPERING

New York, July 27—Anticipating its floating obligations by paying them before the due dates, General Motors has liquidated its seasonable loans and it is announced by the management that $1,000,000 will be deposited with the Central Trust Co. within a few days on account of the installment of 6 per cent bonds which are due October 1. The balance of the installment is not due for 60 days.

General Motors floated $15,000,000 of gold notes 2 years ago this coming fall for the purpose of retiring floating obligations of the company and its subsidiaries and to furnish working capital. A part of this issue was so arranged that it had to be paid off in installments. Last year the installment was $1,500,000 and a similar amount will be retired this year. Next year, under the agreement $2,000,000 will fall due and the same amount in 1914. The following year the remainder of the issue, amounting to $8,000,000, may be discharged at the option of the company or may be continued for 20 years. The company has the privilege of calling the bonds at any interest date on payment of 102½ with accrued interest.

The action of the directors in setting aside such a sum as $1,000,000 for bond payment 60 days before it is due, attracted much attention in the industry and was taken as a proof that the financial plans of the company have worked out nicely during the past season. The stock responded quickly to the report and advanced sharply to 77½ and 34 respectively for preferred and common.

The fiscal year of the company ended July 31 but the annual report will probably require from 6 weeks to 2 months before ready for publication. It is understood that the company made new high marks all along the line.

ALCO TRUCK IN WYOMING

Laramie, Wyo., July 29—Heavy rains that washed away bridges and turned the trail ahead into a sea of impassable mud were encountered by the transcontinental Alco truck crew during the past 2 days.

Now that the roads are comparatively dry the truck was able to start this morning along the road to Medicine Bow. In 30 days of running time it has passed through eleven states and has rolled up a mileage of 2,550 miles since the start from the factory of Charles W. Young & Co., its owners, of Philadelphia.

BUFFALO ADDS NEW COMPANY

Buffalo, N. Y., July 30—A substantial addition to the local industry was made here today when the Mutual Motor Car Co. was incorporated with capital of $125,000. Directors of the new corporation are: Albert Poppenberg and Frederick C. Carter, both of whom are connected with the Poppenberg Motor Car Co., and Orson E. Yeager, president of the Victor Motor Truck Co., and also president of the Buffalo Chamber of Commerce. The offices and salesroom of the new concern will be at the Poppenberg Motor Car Co., 674 Main street. Pleasure cars may be handled exclusively, although it is probable that commercial vehicles will be added later to the selling list. The new concern is entirely a dealers' proposition and no factory for the corporation will be required.

OLIVER COMPANY DISSOLVED

Detroit, Mich., July 27—A decree dissolving the Oliver Motor Car Co., bankrupt, was signed and filed by Judge Mandell on Friday in the United States circuit court. An order directing the sale of machinery has also been issued by the judge.

TREGO QUITS THOMAS COMPANY

Buffalo, N. Y., July 29—Frank H. Trego, chief engineer of the E. R. Thomas Motor Car Co., Buffalo, N. Y., has resigned, the resignation to take effect September 1.

Oldfield Bill Coming Before House

Patent Measure Will be Reported Out of Committee This Week

WASHINGTON, D. C., July 26—Of far-reaching importance to the motor car and accessory industries is the fact that the Oldfield patent bill will be reported to the house of representatives next week, and according to Representative Oldfield, chairman of the committee on patents, will be passed by the house next December. The measure aims to change the patent laws and if enacted will upset so many existing conditions of purchase and sale that a short phrase to describe its sweeping character is difficult to find. Briefly, the feature of the bill is the proposition to eliminate fixed prices on patented articles. In other words, a motor car, a spark plug, carbureter or any other patented article now to be bought at approximately the same price in Washington, Chicago or any other American city, if the Oldfield bill is enacted may be sold at any price the dealer can get for it.

The bill aims a sharp blow at many big manufacturing interests, and as it was originally drawn it produced numerous protests from manufacturers, inventors and patent lawyers. However, some changes have been proposed for the bill, and when it is reported certain features will have been modified. As it will be reported the bill will have four main features.

One of them will require that every patent shall expire within 19 years after the application has been filed, exclusive of the time used in the patent office, and allowing the inventor 2 years to obtain his patent allowances. Mr. Oldfield's idea on this is that big concerns with unlimited opportunity for legal network can block all sorts of small inventors by keeping their claims at slow speed, filling the patent office with applications and not really wanting to get a patent, but desiring to stop the way for those behind. It is understood that since the possibility has been realized of this Oldfield bill becoming a law some big industries have bent every effort at getting their claims patented, when heretofore they were content to linger and delay to any extent.

Of especial importance to everyone who makes purchases, however, is section 32. Probably the worst nightmare some of the manufacturers of the country could have would be the dream of the enactment of this section. For years the federal courts have held that any storekeeper who sells a patented article at a price less than that at which the manufacturer says he can is guilty of an infringement of the patent. As originally reported the bill would have wiped out the manufacturer's right to set a price. As it will be reported this time it will state that it is not an infringement of a patent to resell a patented article at a lower price than that fixed by the manufacturer. The change means that when a manufacturer sells his goods to a storekeeper, if he can get it he can obtain a contract not to cut prices and that if the storekeeper takes it into his head to hold a bargain sale on the manufacturer's goods he can do so without being called a patent infringer and bringing down the wrath of the court in the shape of an injunction. Of course, the manufacturer will get out his contract and sue the storekeeper in the civil courts. That will be another matter. Says Mr. Oldfield on this subject: "And the civil courts will never uphold the manufacturers." The manufacturers say industry and business will be upset. "If a man cannot do business without some special privilege of this sort he ought not to be in business," says Oldfield in reply. "And I regard this price maintenance the greatest of all privileges."

One of the big features of the bill consists of several amendments to the Sherman anti-trust law. It makes the Sherman law apply to all patent monopolies. Big concerns which buy up all the patents in sight and fail to use them will have to expand their industry or drop their unused patents. Under these amendments the "compulsory license" clause of the bill affects the patent monopoly situation also. Under this clause a manufacturer is forbidden to buy a patent and let it lie idle for the sole purpose of stifling competition. The amended bill which will be reported exempts the original inventor from this clause. It gives him in that way time to get a manufacturer interested in his article.

RECENT EASTERN LITIGATION

New York, July 30—The American Ever Ready Co. has entered suit in the United States district court against the Interstate Electrical Novelty Co., charging infringement of Fuld's patent covering a device for testing electric batteries. The device consists of a pair of holes drilled through the casing of a battery, opposite the battery terminals. They are so arranged that it is possible to test the battery without breaking the seal. The utility of the idea is that where batteries are kept in stock for considerable lengths of time and are subject to deterioration, it has been customary to open the containers to discover whether or not they were in salable condition before a sale. After the seals have been broken, there is no way in which to determine whether the battery has been used. Under the patent, the claim is made that while the battery can not be used without breaking the seals, a thorough test can be made as to its efficiency. Victor C. Borst is handling the case for the complainant.

Petition has been filed by the American Taximeter Co. to have the Kayton Taxicab and Garage Co. declared bankrupt. The original motion for a receiver was denied, but Williams, Folsom and Strouse, attorneys for the petitioning creditor, announce that it will be renewed. The liabilities of the concern are estimated at $14,000 and the assets are placed nominally at $10,000 by the attorneys for the petitioner.

Alleging infringement of the Corcoran patent on a screw adjustment used in a certain type of vehicle lamp, the Victor Lamp Co. has entered suit against the Knickerbocker Brass Goods Co. of New York asking an injunction, accounting and damages in the United States district court. The device is covered by patent No. 980,493, issued in January, 1911, and transferred to the Victor company in June, 1912. Louis F. Perl is handling the matter for the complainant.

Injunction was granted against the Auto Surplus Stock Syndicate and its president, forbidding them from violating the Mosler license to sell spark plugs. Albert Falck for the Mosler company showed the United States district court the contention of the complainant that the syndicate was selling the plugs in suit at less than the scheduled price.

CONDITION OF RUBBER MARKET

New York, July 30—Crude rubber sagged throughout the past week in the markets of the world, the decline being measured by about 4 cents a pound in the fine upriver grades. Trade was of small proportions and there was more selling pressure than buying inquiry. The trade generally appears to be awaiting developments. The few sales that were made seemed to be in the nature of profit-taking on purchases made when the price hung around $1.10. It was noted that the offering of considerable lots had to be at fractional concessions in order to produce sales. The buyers were consumers to a greater extent than showed last week.

STUDEBAKER RETIRES BONDS

New York, July 29—Goldman, Sachs & Co. financial agents for the Studebaker Corporation, officially confirm the report that the Studebaker concern has ordered the retirement of $450,000 of the preferred issue floated several months ago. The reason for the retirement of the stock is that the company's business has been on such a large scale that there was no necessity of allowing this stock to remain outstanding.

Routes and

MOUNTAIN SCENE NEAR KITTATINNY, PA.

DU BOIS, PA., TO CHICAGO

DU BOIS, Pa.—Editor Motor Age—Will Motor Age kindly give me the best route from DuBois, Pa., to Chicago, Ill., via Canton, O., also stating the distance.—James A. Schwein.

Going south to Luthersburg, and following the main thoroughfare to the southwest through Troutville, Punxsutawney, Smicksburg, Rural Valley, Slatelick, Freeport, Tarentum, Aspinwall to Pittsburgh, 108.9 miles, will be found fair to good dirt roads with some stretches rough and hilly. West of Pittsburgh your best route will be via Wheeling, passing through Carnegie, Bridgeville, Canonsburg, Washington, where you will strike the old National Pike, Claysville, West Alexander and Elm Grove, the distance being 61.3 miles. This is a hilly, winding road with some stretches of macadam, some fair dirt and some rough pike and though not a good wet weather road is the best route west from Pittsburgh. Turning sharply north from Wheeling on good macadam road and following the Ohio river to Steubenville will be found a very scenic portion.

Passing through Bridgeport, Warrenton, Brilliant, about 4 miles beyond Brilliant look out for steep upgrade and a couple of miles further on an extremely dangerous tunnel under the railroad. This is very close to Steubenville. Continuing northwest from Steubenville, the towns enroute are Wintersville, Richmond, East Springfield, with caution for steep winding downgrade about 2½ miles beyond Amsterdam, which you should take care not to pass but turn left with main travel. There is a long upgrade 3½ miles beyond Harlem. Carrolton, New Harrisburg, Morges Corners, Magnolia, Industry will be passed through before you reach Canton, having traveled 85.8 miles. This stretch also is liable to be poor traveling in wet weather.

From Canton to Cleveland you will have fair to good gravel to Akron with macadam and brick the rest of the way, going through New Berlin, Greentown, Uniontown, Springville to Akron, then by way of Ellis Corners, Ghent, Brecksville and Independence to Cleveland. Or, going by Cuyahoga Falls, Silver Lake, Stow Corners, Hudson, Twinsburg, Bedford to Cleveland will give you a brick road all the way from Akron.

West from Cleveland you will pass along the shore of Lake Erie, which doubtless will be the pleasantest route in warm or dry weather. Crossing the Rocky River viaduct jog right and take first left turn on brick pavement crossing trolley, and going straight ahead on the brick road. You will pass through West Dover, Lorain, Vermillion, Huron, Sandusky, Castalis, Clyde, Fremont, Woodville, keeping straight ahead with main telephone poles. A little less than a mile beyond Woodville bear to the left on the road to South Bend, following then through Pemberville, Scotch Ridge, Bowling Green, Napoleon, Ridgeville, Archbold, Stryker; about 1½ miles beyond Stryker turn to the right across the railroad and trolley, turning left immediately beyond, then following telephone poles straight ahead with main travel. Continuing on through Bryan, Edgerton, Waterloo, 3 miles farther on is sharp left and then right turn. Running through Kendallville, Wawaka, after leaving which look out for winding railroad, and passing through Ligonier and Goshen you will find this a very pleasant portion of the trip to Mishawaka and South Bend, the distance from Cleveland being about 280 miles. Traveling now to LaPorte over gravelly dirt roads which may be soft in very dry weather or after heavy rains, then to Westville, with caution for sharp left and right curves, and immediately beyond bearing to the west on macadam to Valparaiso, thence west through Ainsworth, Merrillville, Schererville, thence north through Highlands and Hessville to East Chicago and Whiting to Chicago, covering about 100 miles. It will be necessary to make a detour between South Bend and LaPorte, instead of going by the regular route through New Carlisle, following the heavy telephone line out of South Bend to Stilwell, crossing the river at this point and entering LaPorte via Monroe street. This is on account of road construction in the vicinity of New Carlisle.

OIL CITY, PA.,—LYONS, N. Y.

West Monterery, Pa.—Editor Motor Age—I would like the best route from Oil City, Pa., to Lyons, N. Y.

2—Where could I secure road maps of Pennsylvania and New York, and what would be the cost?—Burnel V. Barger.

Your best route will be to go north straight through Plummer to Titusville, Spartansburg, Concord Hollow, Elgin, Beaver Dam, Wattsburg and Lowville to Northeast. After passing Titusville you should find good dirt and gravel roads all the way to Lake Erie. From Northeast the road in general direction follows the lake shore. About 18 miles from Northeast is a long descent and sharp left turn across an iron bridge; then passing on through state line and Ripley about 3½ miles beyond the last mentioned town it is necessary to turn to the right across two railroads and turn west immediately and follow the trolley across a long viaduct into Westfield. Brockton, Fredonia, Silver Creek, Irving, and Evans are passed through; then watch for a left curve downgrade and cross another

Touring Information

SCENE ON DELAWARE RIVER AT DELAWARE WATER GAP, PA.

iron bridge for the run into Buffalo. Leaving Buffalo mostly good roads will be had via Pembroke to Batavia, thence through Byron, Bergen Churchville and North Chilli to Rochester. Eastward from Rochester your way will lie through Brighton, Fairport, Macedon, Palmyra and Newark to Lyons.

The Official Automobile Blue Book, volume 1, 1912, contains map and running directions for the state of New York and the greater portion of Pennsylvania including the section through which you will pass. The price is $2.50 and it may be obtained from the Automobile Blue Book Co., 910 Michigan avenue, Chicago.

GOING TO NEW YORK CITY

Sharon, Pa.—Editor Motor Age—Kindly give me the route from Sharon to New York city. We are situated on the western border of the state in Mercer county about midway between Pittsburgh and Erie.—L. S. Morgan.

More than one route might be outlined by which to reach New York city from your location, but probably the one which you would prefer is that which traverses lengthwise the central portion of Pennsylvania. This will afford a very scenic trip as well as being the most direct. You will begin your journey eastward over macadam road which reaches well toward Mercer, then fair to good dirt road which continues via Franklin to Oil City and is hilly and rough in places. This is probably the poorest portion of the entire roadway.

Turn south at Oil City, passing through Salem and Salina, then southeast through Mapledale to East Sandy. By taking the long grade a third of a mile out from East Sandy a better road to Shippensville will be found. After passing Clarion the road becomes hilly and winding with fair shale or gravel surface. Brookville, Reynoldsville, Luthersburg, Curwensville, Clearfield, Woodlawn, Wallaceton, Philipsburg and Port Matilda are reached. One bad hill with water bars is to be encountered beyond Luthersburg. At Port Matilda the main thoroughfare between Altoona and Williamsport is entered upon and fair roads of dirt, gravel, clay, stone and macadam are traversed through Milesburg, Bellefonte, Hublersburg, Lamar, Cedar Springs and Flemington to Lock Haven.

From this point on into Williamsport the road follows the valley of the Susquehanna river with its many beautiful views. A distance of 4.9 miles beyond Lock Haven, care is necessary in order not to pass the rough dirt road which should be taken through Avis to Jersey Shore. After passing the last named place much watchfulness is required on account of sharp curves, railroad crossings and bridges on the run into Williamsport. Very picturesque scenery is now to be enjoyed as one proceeds via Montoursville, Hughsville, Picture Rocks and Muncy Valley. From here, if it is desired, a short run may be made to Eagles Mere, a very attractive spot. The route from this point to Wilkes-Barre has been thoroughly signposted and there is no difficulty in following it through Beech Glen, North Mountain, Fairmount Springs, Hunlock Creek, West Nanticoke, crossing the river into Nanticoke and thence to Wilkes-Barre.

Passing through Bear Creek, Naomi Pines, Pocono Summit, Bartonsville and Stroudsburg brings you to Delaware Water Gap. This is a very beautiful place. Following along the river to Slateford, Portland and Myers ferry, a flatboat will convey your car to the New Jersey side, and running straight ahead to Delaware, care will be needed because of some very poor road along the river and a dangerous stone railroad arch. Crossing an iron bridge into Bridgeville you will then reach Danville, Hackettstown, Schooley Mountain, and a couple of miles beyond beware of dangerous horseshoe curve to the left, then proceed through Chester and Mendham to Morristown. The last portion of the trip will take you through Madison, Chatham, Springfield, Elizabeth, Elizabethport, crossing here by ferry to Staten Island. From the ferry landing proceed straight on across the long wooden bridge, being cautioned for left and right curves. From Port Richmond on Staten Island you may enter New York either by Jersey City, Weekawken and West Forty-second street ferry, or by St. George and Staten Island-Manhattan ferry.

Some very beautiful country may be seen by going north instead of south from Hackettstown. The road leads through Warrenville, Allamuchy, Netcong, to Lake Hopatcong, thence along the east shore of the lake to Code, thence southeast to Berkshire Valley, Lower Longwood, Upper Longwood, Newfoundland, Smith Mills, Bloomingdale, Pompton, Oakland, Ridgewood, Oradell, New Milford, River Edge, Cherry Hill and Hackensack to the Forty-second street ferry. To avoid the congestion of lower New York city, from Hackensack go to Fort Lee, crossing the Hudson here by ferry and into the city from the north.

MAKING OVERLAND TRIP

Chicago,—Editor Motor Age—I am intending to make an overland trip from New York city to San Antonio, Texas, I would like to go through the following states: New York, Ohio, Indiana, Missouri, Kansas, Oklahoma and Texas.

Kindly give me the best route. Does a license taken out either in New York or Texas entitle one to enter and pass through the states mentioned?—William Pompee.

Leaving New York for Albany, some detours from the regular route will have to be made as New York state is very active this season in constructing and resurfacing many of its highways. Cross the Hudson river by ferry at Fort Lee and proceed through Leonio, Hackensack, Hohokus, Suffern, Ramapo, Sloatsburg, Tuxedo, Central Valley, Vailgate and Newburgh. From Suffern the road is fine with the exception of about a mile of rough macadam and a quarter of a mile of rough dirt road entering Newburgh. At Newburgh cross the Hudson on a ferry to Fishkill Landing, Wappinger's Falls, Poughkeepsie, Hyde Park and Staatsburg, then via East Park and the Wurtenburg road to Rhinebeck, thence to Hudson, and Stottsville. Then to avoid road under construction your way will lie through Stockport and Kinderhook, where you will have good roads to Valatia and fine macadam to Albany.

From Albany turning west to Buffalo your preferable way will be via Schenectady, passing through Pattersonville, keeping to the south of the river as the road on the north side will be closed all the season. Go through South Schenectady, Mariaville and Scotch Bush, Amsterdam, Fonda. As the direct route will be closed all the season, cross the river to Fultonville, thence to Fort Plain, and recross the river at Nelliston, then Little Falls to Utica. You will find good roads through Oneida, Chittenango to Mycenal, where turn to the right takes one through Manilus Center, East Syracuse, Eastwood, Syracuse, to Camillus, where you should turn to the left to enter Marcellus. Make turn to the west to Auburn. Ten miles out from Auburn turn to the left at the sign and follow the dirt road to Cayuga, in order to avoid almost impassable roads through Montezuma swamp. There is need of caution on the hill going to the ferry.

Ferrying across at Cayuga, continue through Seneca Falls, Waterloo, Geneva, Mendham with mostly fair roads from Cayuga, except in the villages of Seneca Falls and Waterloo. Then good roads will be found through Canandaigua, Mendon, to Rochester, thence through North Chili, Churchville, Bergen and Byron to Batavia. Fair road will be found from Batavia to Pembroke, with a short stretch that is poor in this vicinity, and the balance good to Buffalo. From Buffalo to Erie you will have good gravel road with only a chance that some stretches between Evans and Silver Creek may be poor, though such conditions are more liable to prevail there in the spring than at this season of the year. West of Silver Creek you pass through Westfield, North East, Erie, with good gravel or stone road continuing through Conneaut, Ashtabula, Unionville, Painesville, and University Circle into Cleveland. Leaving Cleveland through Edgewater park via the boulevard along the shore of Lake Erie, way points will be Lorain, Huron, Sandusky, Clyde, Fremont, Woodville, Toledo, Wauseon, Bryan, Kendallville, Ligonier, Goshen, South Bend, LaPorte, Valparaiso, Merrillville, Schererville, Highlands, Hessville, East Chicago, Whiting, Chicago. Passing through Garfield park, and La Grange, then following the general direction of the drainage canal to the southwest from Chicago will take you through Joliet, Morris, Marseilles, Ottawa, La Salle, Princeton, Sheffield, Geneseo, Moline.

Crossing the Mississippi river into Davenport you will then follow the River-to-River road through Durant, Moscow, West Liberty, Iowa City, Coralville, Tiffin, Oxford, Homestead, Marengo, Ladora, Brooklyn, Grinnell, Kellogg, Newton, Colfax, Mitchellville and Altoona, then to Waukee, Ontarioville, Adel, Dexter and Redfield where the White Pole road gives the best road to Dexter, Stuart, Menlo, Casey, Anita, Wyota and Atlantic. Here the former road is taken up with Omaha, the objective point, running through Marne, Walnut, Avoca, Minden, Neola, Underwood, Weston, Council Bluffs and a crossing is made over the toll bridge into Nebraska.

A section of the Omaha-Denver transcontinental route, which is in excellent condition, is traversed to Millard, Gretna, Ashland, Waverly, Havelock, Lincoln,

MAP SHOWING ROUTES THROUGH NEW YORK, PENNSYLVANIA, OHIO, INDIANA AND ILLIN

Emerald, Milford, Friend, Exeter and Fairmont where the Meridan road is intersected. This road extends north and south from Winnipeg, Canada, to Galveston, Texas, and you will follow this to Fort Worth. Turn south on this highway through Brunning Belvidere, Hebron, Chester, Belleville, Concordia, Minneapolis, Salina, Bridgeport, Lindsborg, McPherson, Moundridge, Heston, Truesdale, Newton to Wichita, Kans. From this point to Wichita Falls, Texas, although a portion of the Meridian road, it is also known as the Chisholm trail. Continuing south from Wichita through Wellington, South Haven, Caldwell, Renfrow, Medford, Kremlin, Enid, Hennessey, Dover, Kingfisher, El Reno, Pocassett, Chickasha, Verden, Anadarko, Apache, Lawton, Emerson, Randlett, and crossing the toll bridge over the Red river north of Burkburnett reach Wichita Falls.

About 8 miles south of Wichita Falls beware of mud hole in wet weather, and if bad go back about 150 yards and make detour through the fields. You should next reach Windthorst, then Antelope, Jacksboro, Whitt, Weatherford, Annetta, Aledo, Ben Brook and Fort Smith.

Your last day's journey from Fort Worth to San Antonio will take you through Crowley, Cleburne, Grandview, Itasca, Hillsboro, West, Drew, Waco. From this point instead of following the railroad to Temple go west through Harris, turning south at MeGregor, running through Pendleton to Temple; thence via Holland, to Granger, thence southwest to Georgetown, turning more southerly at this point to Round Rock, Austin, Buda, San Marcos, New Braunfels, Pratt and San Antonio.

As to touring licenses, you are exempt in all the other states through which you tour, with either a Texas or New York license.

PHILADELPHIA TO SYRACUSE

Philadelphia, Pa.—Editor Motor Age—I want a good route from Philadelphia to Syracuse, N. Y., either direct through Pennsylvania or by the way of New York city. I am familiar with the route to New York. I should like road information and hotel accommodations, say, 100 miles apart. Good roads with good scenery would be more to the point than just a short and quick way, for I intend to give five days each way.—Syracuse.

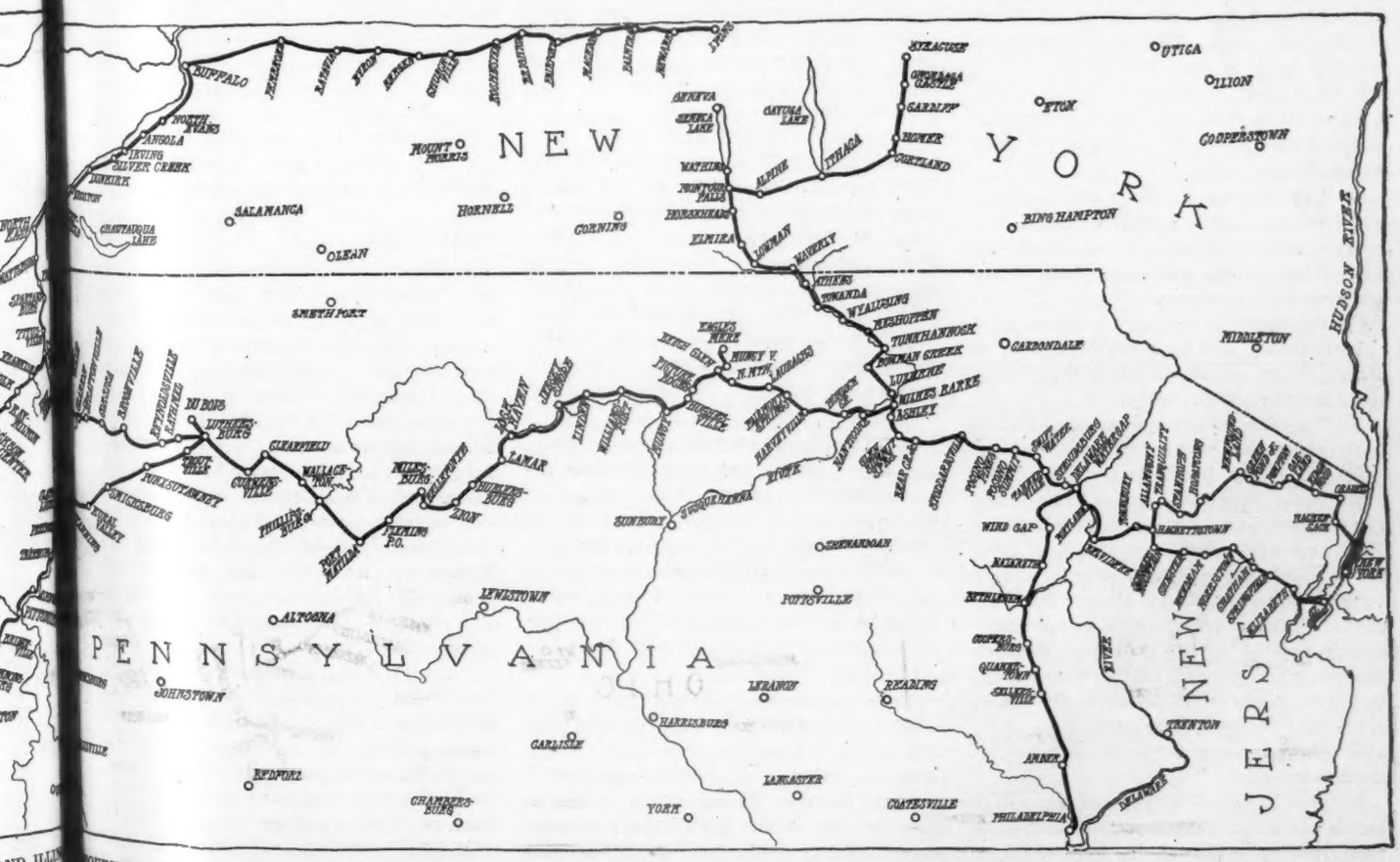
You will not have to go far from home to get into the superb scenic country. Figuring on making Bethlehem the noon stop, you travel through Ambler, Springhouse, Montgomeryville, Sellersville, Quakertown, Coppersburg, Center Valley, Friedensville, Seidersville, Bethlehem, a distance of 66 miles. Here the road diverges to Nazareth, an old Moravian village, the Kittatinny mountain is ascended and the road winds its way through Wind Gap. This is a remarkable pass through the Blue mountains with wonderful views leading through Saylorsburg, Bossardville, Stormville and Delaware Watergap. So far your speedometer will register 102 miles, and as this is a popular summer resort, the hotel and garage proposition is easily disposed of.

Wilkes-Barre, Pa., can be reached through Stroudsburg, Bartonsville, ascending the Pocono mountains over excellent macadam and bearing to the right through Pocono Summit, Naomi Pines and Stoddartsville, which is a distance of 56 miles. This will probably be the stop for the first night.

The next stretch to Elmira, N. Y., 109 miles, is through possibly the most scenic part of Pennsylvania, and it is a succession of steep climbs and descents which necessitates great care in driving and the brakes in the best of condition. Crossing the Susquehanna river just out of Wilkes-Barre, continue through Luzerne, Fernbrook, Kunkle, Bowman Creek, Tunkhannock, Wyalusing, Wysox, Towanda, Athens, Waverly, Lowman and Wellsburg. A short run of 23 miles will find you in Watkins by way of Horseheads and Montour Falls and 26 miles more in Ithaca through Burdett, Bennettsburg, Reynoldsville, Trumansburg, Jacksonville.

The best road from Ithaca to Syracuse is by way of Varna, Willow Glen, Dryden, Cortland, Homer, Tully Center, Cardiff, being a distance of 57 miles.

As your route lies through a summer resort section, hotel and garage accommodations need not be worried over. They are all specially courteous and attentive to motorists.



REQUESTED BY READERS OF MOTOR AGE WHO ARE PLANNING LONG TRIPS IN THE COUNTRY

Horses and Horsepower

Mechanical and Animal Energy Analysed and Compared for Illinois Motorist

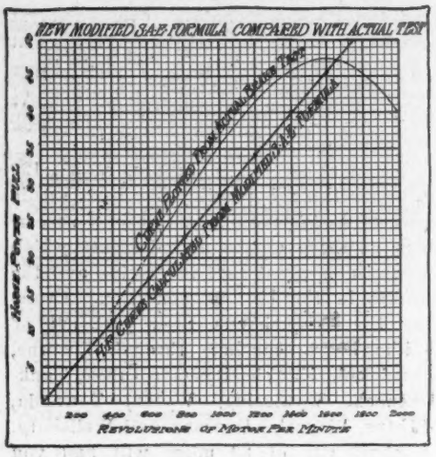


FIG. 1—COMPARISON OF NEW HORSEPOWER FORMULA WITH TEST OF COLE MOTOR

URBANA, ILL.—Editor Motor Age—Why is it that when a motor car appears to be running perfectly and the driver stops the car—say for 5 minutes—then starts to crank the motor again, the flywheel will make a dozen quick revolutions and stop, and after repeating the operation half a dozen times the motor will run as though nothing had happened?

2—How is a 30-horsepower motor rating compared with the power of thirty horses? We know that a 30-horsepower car will stick in deep mud or on a steep hill when four horses can pull it easily. I understand what a standard horsepower is, but do not know what comparison there would be.

3—What is the proper way to distinguish a high-tension magneto from a low-tension or a low-tension from a high?

4—What is the proper way of distinguishing a D. C. magneto from an A. C.?—F. L. Cannon.

1—Probably due to a grain of sand or other foreign substance which temporarily stops up the needle valve.

2—The basis of horsepower computation is the theoretical number of pounds an average horse can lift 1 foot in 1 minute. Tests have found this amount to be 33,000 pounds, which is adopted as standard. A 30 horsepower motor is one that, if properly applied to a load, will exert a turning impulse equal to thirty times this standard. Whether or not this power can be efficiently applied to the load depends upon how it is transmitted to the tractive element, the hoofs of the horse or the wheels of the car. If imperfectly applied, the available power is limited by the efficiency of its transmission.

In your allusion to the car stalled in the mud, whose 30-horsepower engine is powerless to extricate it, but which is easily hauled out by four horses; it must be remembered that the motor is working at a great disadvantage, being helpless to exert its great power because of imperfect traction or frictional losses in transmission, or improper gearing. Four horses are in this instance able to do what a 30-horsepower motor cannot, simply because they are in a position to use their power, and the motor is not. Were designers able to devise a means of transmitting the torque of the motor to the actual motion of the vehicle as efficiently, flexibly and economically as the power of the horse is transmitted to his locomotion, cars with 30 horsepower would be practically invincible.

In comparing mechanical power to animal power, it must be borne in mind that the power of a horse is more flexible than any mechanical source of power ever can hope to be, and that while a horse in the long run is only 1 horsepower, for a short period he may exert an effort greatly in excess of this standard, while a motor, being less flexible, cannot appreciably increase its power in moments of great stress, but in the long run, it can maintain its average power for long periods, showing no fatigue. It is well known that the maximum power of a horse is only available for a comparatively short period, and while he can for a short while show a great advantage over a motor, he must give the palm to the motor when endurance is considered. A 30-horse-power motor does give that much power, and while a 1-horsepower horse may for a very short while develop power greatly in excess of his rating, he does so inevitably at the expense of endurance.

3—The difference between a high-tension and a low-tension magneto, is that the high-tension magneto is self-contained, producing a high-voltage current direct, whereas the low-tension magneto produces a low-voltage current, which must be passed through an induction coil before being fit for jump-spark igniting purposes. This was explained and illustrated in Motor Age for July 5.

4—An alternating current magneto is distinguished from a direct current in that the direct current magneto has a commutator, whereas the alternating current machine has not. Practically all magnetos used for motor car ignition are without commutators, producing an alternating current.

The Readers'

New Horsepower Formula—Rating Shown to Be Conservative—Theoretical and Actual Curves Similar—Direct and Alternating Current Magnetos Distinguished

Formula Given Test

Results Calculated from Modification of S. A. E. Rating Corresponds to Block

INDIANAPOLIS, IND.—Editor Motor Age—I was very much interested in the new horsepower rating formula proposed in the Mathematics of Motoring department of Motor Age for July 25, and particularly in the chart for finding the power developed by any size engine at different speeds. It looks to me as if such a formula would be much better than the S. A. E. rating, provided it gives results somewhere near the actual power developed by everyday engines. How close to brake results does your formula come?—C. F. H.

As a means of comparison, there has been plotted in Fig. 1 two curves, one the brake test of a motor in actual service and the other the horsepower at the different speeds as calculated from the modified S. A. E. formula proposed last week, and whose derivation is shown in the same department of this issue. The upper or curved line was plotted from the figures given by an actual brake test of a Cole four-cylinder motor with 4½ inches bore and 5¼ inches stroke. It was equipped with Bosch magneto and Schebler carbureter and the test was taken by Wheeler & Schebler, assisted by C. S. Crawford, chief engineer of the Cole Motor Car Co.

It will be noted that the results from this test give a curve instead of the straight line obtained from the formula, and average about 5 horsepower higher than the calculated power at the corresponding crankshaft speed. But at 1,600 revolutions per minute, the speed at which maximum power is obtained on the motor under test, the difference between actual and calculated power for this motor is less than 2 horsepower. The test showed 47.4 horsepower maximum, and the formula shows 45.5 horsepower at the same speed. The old S. A. E. formula rating gives the motor 32.4 horsepower, somewhat under the actual showing, it must be admitted. The slight difference between actual and calculated results in this case can be accounted for by the fact that the test was conducted under the very best conditions. The array of talent that was present in the persons of the engineers of the makers of the carbureter and motor, assured that both were in ideal adjustment.

Clearing House

Why Speed Does Not Increase Proportionately to Size—Small Motors Develop Great Velocity—Oil for Water-Cooled Engines—Viscosity Depends Upon Temperature

High Voiturette Power

Long Stroke and Great Compression Cause of Fine Showing of French Freaks

ATLANTA, GA.—Editor Motor Age—I am much interested in the experiments conducted by some of the French manufacturers in an endeavor to make small size motors develop exceedingly high horsepower. Can you explain to me how they are able to do this?

2—Why is it that a high-powered car is not as efficient, comparatively, as a smaller car? For instance, almost any stripped stock car can made 60 miles per hour, while a 90-horsepower bona-fide stock car hardly ever is able to do more than 80 or 85 miles per hour. Also, the Blitzen Benz with 200 horsepower as yet has done only 141 and a fraction.

3—Is the Chadwick Engineering Works of Pottstown, Pa., still making its type 19?—J. N. Brightwell.

1—Small motors are made to develop great horsepower by means of increased stroke, high compression, and excessive speed. The reason for this is that the increased stroke permits of a greater degree of expansion per given cylinder bore than a shorter stroke, thus utilizing a greater amount of the expansion of the ignited gases; on the same principle of a compound or multiple expansion steam engine, the difference being that the whole expansion takes place in one cylinder. High compression induces more rapid combustion, and as power depends to a great measure on the rapidity of combustion, a high-compression motor will naturally deliver increased power over a low-compression type. Increased speed means, up to certain limits, increased power, as it permits of greater actual expansive pressure per minute than at slower speeds. Time being one of the three factors of power. There practically is no limit to the degree to which power may be increased by these means, except the limit to the strength and endurance of metals, and the electrical lag in ignition.

2—The reason why high-powered stock cars are able to make less speed in proportion to their power than lower-powered cars is that their weight is usually excessive, and above certain speeds power becomes less and less a factor in the maintenance of speed. Other contributing influences are that the great weight that is unavoidable in high-powered cars is very destructive to tires, and hence the weight of a high-powered car is a means of compassing its own defeat. Large and heavy cars are also very hard to control under great speed, and are seldom run at their maximum rate of speed for this reason. A notable example of this is the late Walter Christie's front-drive car, which developed 240 horsepower, but owing to the fact that it became unmanageable at high speeds, it never was run as fast as it could have, had it been controllable. This car is at present being raced by Barney Oldfield, and if it could be controlled would probably be the fastest car ever built. Perhaps the most important reason for the fact that speed does not increase in proportion to power is to be found in the factor of wind resistance. Blitzen Benz, which you mention, in making approximately 142 miles per hour, required but 40 horsepower to overcome the road resistance, the balance of its 200 horsepower being consumed in overcoming air pressure, which was computed at approximately 80 per cent.

3—The Chadwick Engineering Works continues its model 19 for 1912.

VISCOSITY OF OILS

Union Grove, Wis.—Editor Motor Age—Which is the best oil to use in a water-cooled car, the following tests being claimed:

Fire, Degrees	Gravity, Degrees	Viscosity, Degrees
450	25	210
390	20.5	330
375	21.5	200
470	26	300

—O. P. Graham.

It is quite impossible to answer your question, as Motor Age does not know the temperature at which the gravity measurements were taken. This should be at 60 degrees Fahrenheit. As you have not given the temperature at which the viscosity of the four oils was taken, it is impossible to give anything definite. You know that viscosity drops very rapidly at high temperatures, and it is solely a question of the temperatures at which these readings were taken, and also the instruments used in the test. It generally is customary to take viscosity of distilled oils at 100 degrees Fahrenheit, and of cylinder stock at 210 degrees Fahrenheit. It is only when the temperature at which gravity and viscosity are taken, and whether the open or closed cup was used in the flash test, that it is possible to give anything accurate.

How to Overhaul Car

Owner Wants to Retime and Rehabiliate Buick—Loose Bearings Cause Knock

KALAMAZOO, MICH.—Editor Motor Age—I have a 1909 Buick, model 10, the engine of which I wish to take down and overhaul, as the compression is weak. I am sure there is considerable carbon deposit in the cylinders. How should I go about this, and how should I adjust the bearings, if they need it, for the engine is noisy?

2—What is the meaning of retiming and how should I do it?

3—Opening the throttle suddenly, or changing from low to high gear, there is a peculiar knock or rattle in the engine, no matter whether it is cold or not, or whether the spark is advanced or retarded. What is the reason?

4—The oil sight glass dome on the dash is, according to my understanding, supposed to show at least ¼-inch of oil when the engine is running. Even when I oil enough that the engine exhaust smokes, the oil bubbles a little. How would you account for this? I have cleaned out the tubes leading from the crankcase.

5—Why is it that with the throttle one-third open the car will do about 30 miles per hour, and after this point, no matter how far I open the throttle there is no material increase in speed?—A Reader.

1—To overhaul your motor proceed as follows: Remove the cylinders from the crankcase and scrape the cylinder walls and heads of the pistons well, washing with kerosene. Remove valves and cages and thoroughly clean and grind them. If they are badly worn it would be advisable to put in new valves and cages. Examine the wrist pins, and if considerably worn, renew the bushings. Take off the lower half of crankcase and see that both connecting rod bearings and main bearings are tight and in good condition.

2—There are two kinds of retiming, that

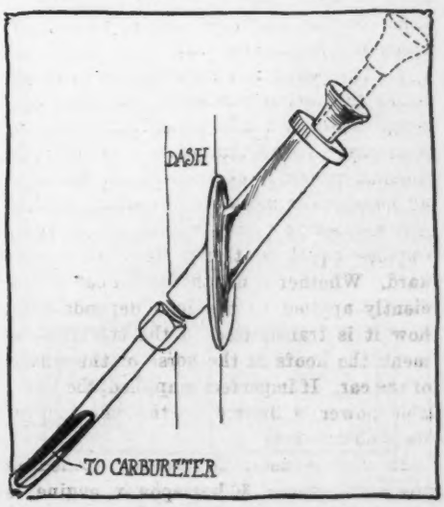


FIG. 2—REGULAR RAYFIELD DASH ADJUSTMENT

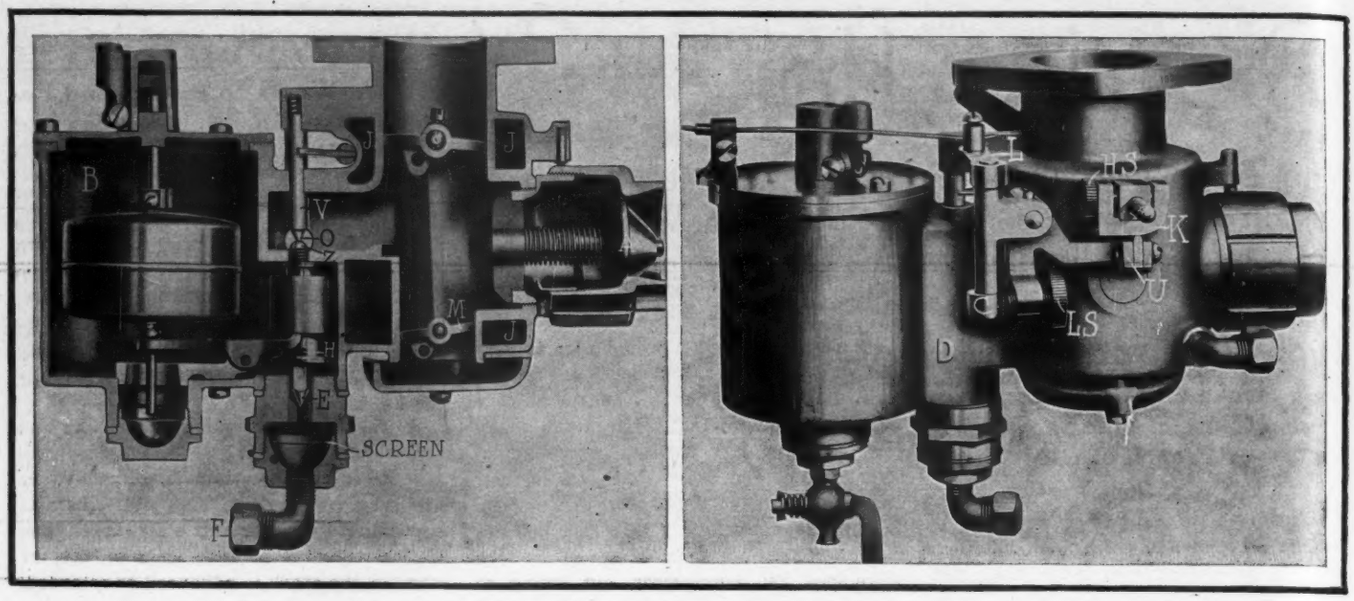


FIG. 3—RAYFIELD D-4 CARBU RETER WITH SECTIONAL VIEW

of ignition and of the valves. Assuming that the latter is meant, the term applies to the adjustment of the position of the camshaft or shafts with respect to their time of opening the valves. The timing formula of the Buick model 10 is as follows: Exhaust valves close on dead center—intake opens ½ inch of piston travel after dead center. Would suggest that if you have had no experience in timing a gas engine, it be left to a competent expert, as valve timing is one of the most difficult of internal combustion motor adjustments.

3—If your engine knocks with a retarded spark when cool, on manipulating the throttle or climbing to a higher gear, it indicates that your bearings are loose. Drop the lower half of the crank case and see that all bearings are properly adjusted.

4—The reason for this is either that the oil level in the crank case is too high, allowing the cranks to splash too much oil, your piston rings are worn or loose, allowing the oil to slip past the piston, or your cylinders are scored. If the latter is true, the cylinders will have to be ground, and if the scorings are deep, sufficient metal may have to be ground off to necessitate a repair size piston, or at least new rings. If the rings alone are at fault, they may easily be replaced. If the level is found to be too high, cut down the overflow holes, lowering it, so the cranks will not splash so much. If none of these avail, the quality of lubricant must be at fault.

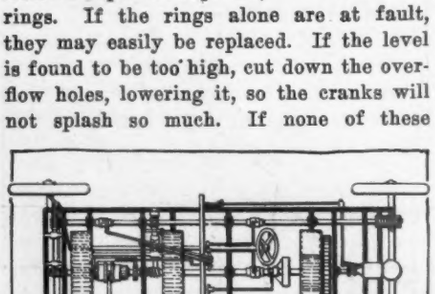


FIG. 4—PERPETUAL MOTION CAR

5—Your trouble may be with the control connections, which may open the throttle fully, when the throttle control lever is but one-third around the quadrant, or your carbureter adjustments may be at fault. Have some one manipulate the throttle lever on the steering wheel, and watch the throttle lever on the carbureter for lost motion. If this fails, readjust your mixture.

RHODES SPRING CAR

Pasadena, Cal.—Editor Motor Age—I understand a Los Angeles man has invented a spring-drive motor car that bids fair to revolutionize the propelling power of motor cars. Is this true; and if so, of what does his device consist? Is it of any value?—Constant Reader.

Hampton P. Rhodes of Los Angeles, Cal., has invented a spring-drive power plant, a diagram of which appears in Fig. 4. The idea is to substitute a set of three springs for the usual gasoline motor, in an otherwise standard chassis. The main driving spring is situated immediately in front of the rear-axle gearset and drives through a clutch, propeller shaft, etc., in the usual manner. Under the hood are located two more springs, which furnish the power to wind one another and to rewind the driving spring. All are connected by a shaft and clutches, while the auxiliary springs are geared to a rewinding shaft which in turn is geared to the rear axle. The design includes six clutches, five right-angle worm gears, over twenty additional bearings, and shafting to the length of 2½ times the wheelbase. It is proposed to control it by means of seven footboard pedals and the usual two side-levers. The claims of the inventor are:

The device is an exceedingly simple one, deriving the power from the main driving spring attached to the driving shaft and geared to make 5 to 125 miles per hour, and according to gearing can be made to run from 6 to 24 hours without the use of the auxiliary springs, from which additional power is derived to rewind the main driving spring.

This is accomplished by a set of shift-gearing operated by driver with a pedal attachment and automatically releases itself upon rewinding the main spring. The two auxiliary springs again rewind from the momentum of the car at the will of the operator.

The proposition, then, is to propel a heavy vehicle by means of springs which are wound by the motion they themselves produce. This is perpetual motion. No further comment is necessary. As to its value, it may be made to produce a fortune in the hands of a clever promoter, at the expense of the credulous. As to its practicability Motor Age has no opinion to express, but some critics think the device is as far from practical as Hampton Roads is from California.

MAGNETO NEEDS OVERHAULING

Mena, Ark.—Editor Motor Age—I have been a reader of Motor Age for some time but have never read of a trouble just like mine. I have a model 10 Buick equipped with a Remy magneto. It runs all right on the battery, also on the magneto for a while until the engine begins to warm up then it begins to miss badly but not on the same cylinder all of the time. Then I have to switch on to the battery. I have adjusted the platinum points and carbureter with no effect. There is good compression on all of the cylinders. Can Motor Age help me out?—C. M. Judd.

Your magneto is probably too old to give satisfactory service. If your motor is in good condition otherwise and runs well on the battery, the magneto should be sent to the makers for a thorough overhauling, as the type with which the Buick model 10 was equipped is at present obsolete.

Adjustments of Rayfield D 4

Operation af Parts of Carbureter Explained and Illustrated—Mixture Regulation—Reversal of Current Polarity An Expensive Experiment

LANSING, Mich.—Editor Motor Age—Please explain:

1—The adjustments, air and gasoline, and principal operation of all of the parts of the Rayfield D4 carbureter, including the dash arrangement.

2—In wiring the storage battery the positive wire should be grounded. Would it result in short circuiting if the wires were reversed?—Nemo.

1—The principal working parts of the Rayfield carbureter as shown in Fig. 3, consist of the float and supply valve mechanism, which regulates the supply of fuel to maintain a constant level of gasoline in the float chamber B; the nozzle needle-valve V which operates in conjunction with the throttle T which also governs the movement of the mechanical air intake M; the automatic air valve A and the spray nozzle Z. In operation, the gasoline is fed through F to the supply needle-valve E, which is closed by the float lever, upon reaching the proper level in the float chamber B. The suction of the engine draws the fuel from this chamber through passages H, and it is sprayed out of nozzle Z the suction chamber, drawing in a blast of air from the set air port O, over the nozzle jet, and into the mixing chamber, from whence it is drawn through the throttle valve to the intake manifold, being governed as to volume by the position of the butterfly throttle as controlled by the operator. Simultaneously with the opening of the throttle, the needle valve V is raised higher from its seat in nozzle Z, admitting a greater volume of gasoline as the throttle is opened. The movement of the throttle furthermore controls the movement of the mechanical air inlet M, to which it is connected by a connecting rod, pivoted past center, so that M does not open until the throttle T is one-fourth open. This causes the proportion of air to gasoline to be greater as the throttle is opened, the mixture being thinned still more, as the throttle is opened and the suction of the engine increases, by the automatic opening of the auxiliary air valve A. This latter is mounted on two springs, a light one that permits a limited opening at low speeds and a heavy one for high speeds. The operation of this valve is governed solely by the suction of the motor and under heavy loads when the throttle is wide open, but with the speed of the motor slow, remains closed. The carbureter is water-jacketed to keep the mixture warm, thus facilitating rapid vaporization. At D is a small dam, for the purpose of permitting a pool of gasoline to form at the set air inlet when the carbureter is flooded, in starting. K in the exterior view is the throttle lever stem and cam. This cam operates the angle lever U, which raises or lowers the needle valve V, as the throttle is opened or closed. L is the dash adjustment crank which operated cam C, to raise or lower the needle valve, independent of the throttle position, for special circumstances, where the mixture is to be temporarily changed.

The adjustments of these parts are as follows: To determine the position of the needle valve in relation to that of the throttle, the dash adjustment is placed in the neutral position, which may be determined by observing that the cam C is out of contact with the low-speed screw LS. This screw is next unscrewed until arm U begins to leave contact with cam K. It should then be turned to the right, one and one-half turns. The automatic air valve is then adjusted by unscrewing its exterior adjustable seat ⅛-inch. The motor is then primed and started with the throttle set at about ¼ open. Upon starting it is slowed down to as slow as it will run, when the lowspeed lever is turned one notch at a time until the motor runs smoothly at low speed without a load. If the throttle does not close sufficient to permit slow speeds, the throttle stop on the reverse side of the carbureter may be unscrewed until it does. The low-speed adjustment being obtained, the motor is run until warm, when it is tested by pressing on the automatic air valve very gently with a pencil or like instrument. If the motor speeds up, the mixture is too rich, and should be thinned by turning the low-speed screw to the right until the motor begins to slow down.

The low-speed adjustment being right, the throttle is opened suddenly to see if the motor speeds up. If it is sluggish, or pops back into the carbureter, the high-speed adjusting screw, HS is turned to the right until this fault is remedied. If after having screwed this adjustment all the way up, the motor continues to pop back into the carbureter, the nozzle is too small, and should be substituted by a smaller one. If at intermediate speeds the motor back-fires, the adjustable air-valve seat should be turned to the right, thus increasing the spring tension, and decreasing the quantity of air at a given speed.

The dash control regularly included with the carbureter is of the pull-plunger type, and is connected and mounted as shown in Fig. 2. The bowden wire is connected to the dash control crank, and the tube to the bracket clamp, on the carbureter. The other style, which is shown in Fig. 5, is in the form of a kick-lever that may be applied to the foot board for operation with the foot, or to the dash for hand adjustment. Lost motion in the lever connections is obviated by the use of ball joints on the connecting rod. The dial is marked R on the right, designating the position for a rich mixture, and L on the left, designating a lean mixture. In the application of the first-named type, the dash control crank on the dash is set so that it is in neutral position when the pull-plunger is seated against the body of the attachment, in which position it should normally be left. The lever type is connected to the carbureter control in the same manner, but the latter is adjusted so that the normal position is with the dash control crank half turned, permitting dash adjustment in either direction; the dash lever being placed in the center of its quadrant for normal running. These controls are for the purpose of enriching the mixture for starting or heavy pull-for a hot motor, or for high-speed work, on a moment's notice.

ing; and with the adjustment recommended in connection with the kick-lever type, the mixture may be thinned further

2—Reversing the proper order of polarity in your battery wiring would not cause a short circuit, as the circuit would not be changed in any way except as to direction of flow, but such an experiment would probably result in burning out the coil.

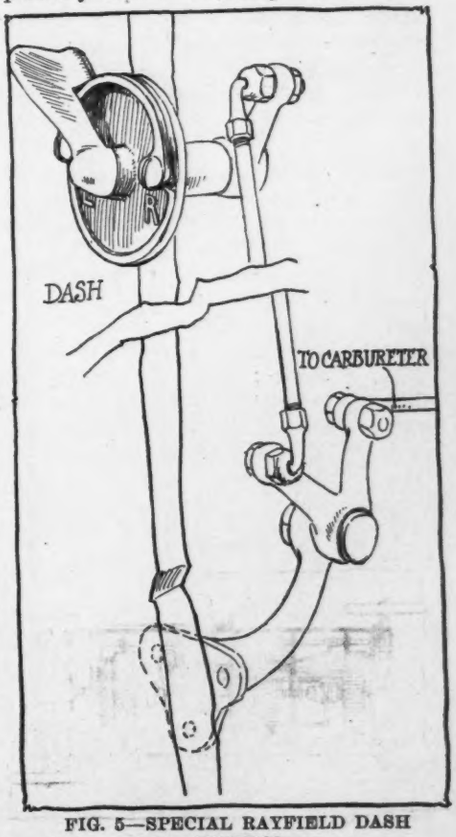


FIG. 5—SPECIAL RAYFIELD DASH CONTROL

The Motor Car Repair Shop

Hints for the Amateur

Straightening a Steering Spindle

SOMETIMES it happens that when a motor car wheel is removed for inspection or adjustment of the bearings or for the attachment of a speedometer gear, the car is left standing with one end of the axle supported by a very insecure jack which gives way at the slightest jar to the vehicle. When this happens, about the least damage that is done may be the bending of the wheel spindle. There are, of course, other accidents that result in bent spindles, for this trouble is not uncommon in shops where much repairing is done. In Fig. 1 is shown the means and method employed in a large repair shop to straighten a spindle which has become bent. It is first placed in a forge over a slow fire and heated to a red heat, the operator being careful to heat it evenly and only to a cherry red color; then it is placed between suitable irons on an anvil or into a vise and a large bending bar, B, employed to draw the spindle back into its original position. The experienced blacksmith generally can tell whether the spindle is straight or not simply by looking at it, but tools also are employed in the larger shops which facilitate testing the trueness of a spindle after it has been straightened. It is very necessary that a spindle be true, otherwise the bearing will fit improperly and wear with unusual rapidity.

Beware of Stale Gasoline

It is not uncommon for a motor car to start on a tour with the gasoline tank filled with a good grade of gasoline and run most beautifully for the first 2 days, perhaps, or until a fresh supply of gasoline is taken on at some very small out of town garage or country store. Then before long a noticeable loss of power in the motor will be felt by the operator and perhaps by the whole party if the driver happens to be a member of the family. There is nothing more depressing to the spirits of a party out for a lengthy ride than the impending gloom of possible motor trouble. This loss of power, accompanied with much difficulty in starting the motor in the morning, is most annoying to the unsophisticated, because a thorough examination of all features of the power plant will reveal nothing, for there is nothing wrong with the motor; it is the fuel that is giving the trouble. The gasoline taken on either is stale from long standing or it contains water, or it may be of an exceptionally poor grade.

In trouble of this kind, to facilitate starting, one should drain a half to a cupfull of gasoline from the float chamber of the carbureter. This will remove the water and dirt which has settled therein during the night. This should be followed by priming the cylinders with gasoline and then having some one hold a cloth saturated with gasoline over the air intake of the carbureter while the motor is being cranked. The only remedy for the power loss is a slight adjustment of the carbureter until a fresh supply of a better grade of fuel can be obtained.

Poor Gasoline Gives Trouble

It is reasonable to state that the origin of most carbureter troubles is due to dirt of water in the gasoline. Many people have this trouble and do not realize it. The

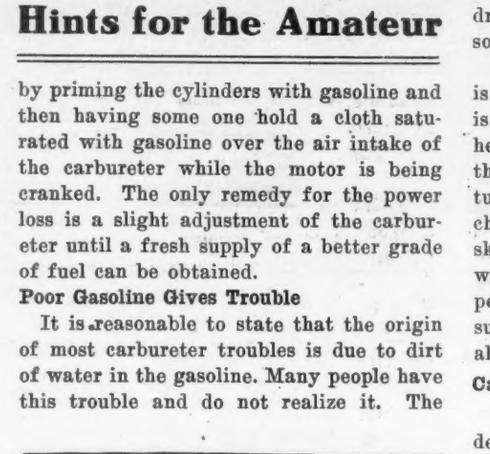


FIG. 1—STRAIGHTENING STEERING SPINDLE

motor stops, then the driver cranks without success. Then perhaps he looks for the cause of the trouble in every place, but the right one. Often he takes the carbureter apart and gets it out of adjustment, or if he is lucky and strong enough, until finally the water or dirt is sucked out of the carbureter nozzle and the motor starts up again without any apparent reason.

Many motorists think that chamois skin separates water from gasoline because they frequently see a few drops of water left on the chamois. The fact is, water being heavier than gasoline, settles to the bottom and the pressure and weight of the inpouring gasoline on the water, as it is pressed into a film over the chamois, forces it through the skin. Therefore, unless a trap is provided in the gasoline line leading to the carbureter, or unless the float chamber of the carbureter itself is drained occasionally, trouble from this source is bound to ensue.

However, the use of a chamois strainer is very good practice and if the gasoline is poured into the funnel from a greater height and in less quantity so as to keep the gasoline in the funnel in a constant turmoil, the gasoline will flow through the chamois faster because the pores of the skin are kept free from the deposits of water or dirt. Even if a little water does penetrate this skin no particles of dirt of sufficient size to be of any harm will be allowed to pass into the tank.

Care of Spark Plugs

One of the points on which troublesome deposits of carbon are apt to gather is on the sparking points of the spark-plug electrodes. The flakes of carbon are very apt to gather on the irregularities of the plugs and interfere with their functions. The spark cannot be expected to leap the gap between the two electrodes if there is a flake of carbon between them, and it is for this reason that they should be given an occasional inspection and cleaning, if such a step is found necessary. They may be cleaned very readily with a rag and a little kerosene and then wiped dry. When removing the plugs from the cylinder great care should be exercised that they are not broken, as a crack in the insulation will be coincident with the departure of all usefulness of the plug. There are many plugs so constructed that they are to a large extent self-cleaning.

The points of the plug should also be at the correct distance from each other. If they are too close the sparks will not be as effective in igniting the charge as they would be if the distance between the two electrodes were correct. If, on the other hand, the points are spread too far apart the spark is apt to be irregular, and, in the case where the current gradually decreases, as when dry batteries are used, the trouble may be very baffling and hard to locate. The distance between the two points should not be over 1-32 inch under any circumstances, as beyond this point the ignition would be very irregular and a high voltage would be very necessary in order to be powerful enough to make the spark jump the gap with any degree of certainty. A common method of testing the distance between the electrodes is to use a common visiting card or a dime worn thin. The card should just fit within the gap and the dime should be just a trifle too thick to pass in. In other words, if the card will not pass in the gap is too small, or, on the other hand, if the dime will pass in the gap is too large. Another precaution is to wipe all dirt and oil from the porcelain.

The Mathematics of Motoring

New Horsepower Rating

Part 2

THAT the new formula proposed in this department last week for figuring the horsepower of gasoline engines of the four-cycle type where it is desired to take into consideration not only the bore and number of cylinders but the stroke and crankshaft speed as well, is a logical development of the standard S. A. E. or A. L. A. M. rating formula may be understood from the way in which the new formula is derived. As stated last week, the new formula, which may be called the modified S. A. E. formula, is

$$H.P. = \frac{D^2NSR}{15{,}000}$$

where D is the cylinder bore in inches, S is the stroke in inches, N is the number of cylinders, and R the crankshaft speed in revolutions per minute. Its basis is the standard S. A. E. formula, which is usually stated in the following way:

$$H.P. = \frac{D^2N}{2.5}$$

where D is the cylinder bore in inches and N is the number of cylinders, and is based on the assumption that the speed of the piston is 1,000 feet per minute in all cases.

As explained last week, though the old rating formula is correct for motors of such stroke and crankshaft speed that the piston speed is 1,000 feet per minute, it takes no account of differences in stroke or speed of revolution in motors of the same bore, which would affect the piston speed and therefore the power delivered; for, other things being equal, the greater the piston speed, the greater the delivered power—within limits.

Since the power developed varies as the piston speed, the power of a motor at a piston speed P will be to the power shown by the S. A. E. rating, as P is to 1,000, or

$$H.P. = (S.A.E.\ power) \times \frac{P}{1{,}000}$$

$$\text{but S. A. E. power} = \frac{D^2N}{2.5}$$

$$\text{So H. P.} = \frac{D^2N}{2.5} \times \frac{P}{1{,}000} \text{ or } \frac{D^2NP}{2{,}500}$$

The speed of the piston depends on two factors, the revolutions per minute and the stroke. The revolutions per minute to give a piston speed of 1,000 feet per minute varies inversely as the stroke; that is, in each revolution the piston travels twice the length of the stroke and the greater the stroke the lesser number of revolutions of the crankshaft per minute is required to give the standard piston speed. For instance, a motor with a stroke of 5 inches must turn over at 1,200 revolutions per minute to give 1,000 feet per minute piston speed, while a motor of 6 inches stroke need turn over at only 1,000 revolutions per minute to give the same piston speed.

Modified S. A. E. Formula:

$$H.P. = \frac{D^2NSR}{15{,}000}$$

Where
D = Bore in inches
S = Stroke in inches
R = Crankshaft revolutions per minute
N = Number of cylinders

This is figured as follows, where S is the stroke in inches, R the revolutions per minute of the crankshaft and P the piston speed in feet per minute:

$\frac{S}{12}$ = stroke in feet;

But the piston travels twice the length of its stroke in each revolution of the crankshaft; so

$$P = \frac{2S}{12} \times R = \frac{SP}{6}$$

$$\text{but } P = \frac{SR}{12}$$

substituting in above,

$$H.P. = \frac{D^2NSR}{2{,}500 \times 6} = \frac{D^2NSR}{15{,}000}$$

In a four-cylinder, 4½ by 5 motor, running at 1,400 revolutions per minute

$$H.P. = \frac{(4\frac{1}{2})^2 \times 4 \times 5 \times 1{,}400}{15{,}000} = 37.7$$

For four-cylinder motors the formula may be shortened by substituting 4 for N and

$$H.P. = \frac{D^2SR}{3{,}750};$$

And for six-cylinder motors the formula becomes in the same way,

$$H.P. = \frac{D^2SR}{2{,}500}$$

From the above it will be seen that the piston speed of a motor does not depend on the bore of its cylinders, but only upon the stroke and the crankshaft speed. Knowing the stroke, the piston speed can be figured for any number of crankshaft revolutions per minute, from the formula above for

piston speed, $P = \frac{SR}{6}$.

In the table below are given the piston speeds in feet per minute of motors of different strokes in inches at various crankshaft speeds in feet per minute. When the speed of revolution of a motor of any given stroke is such that its piston speed as shown in the table is 1,000 feet per minute, its power rating according to the new formula is the same as that obtained by the old S. A. E. formula.

The new power formula may be used in terms of the piston displacement and crankshaft speed, if it is so desired. This is particularly handy in conjunction with the piston displacement table published in this department of Motor Age for May 2, 1912. By this method, the horsepower is found by multiplying the piston displacement by the revolutions per minute and dividing by 11,800. The formula may be stated:

$$H.P. = \frac{\text{Pist. Disp.} \times \text{R. P. M.}}{11{,}800}$$

For instance, in the example cited above, of a four-cylinder motor of 4½-inch bore and 5-inch stroke, at 1,400 revolutions per minute, the power would be found as follows:

From the table in the May 2 issue, we find the piston displacement of a motor of these dimensions to be 318.1 cubic inches. So,

$$H.P. = \frac{318.1 \times 1400}{11{,}800} = 37.7$$

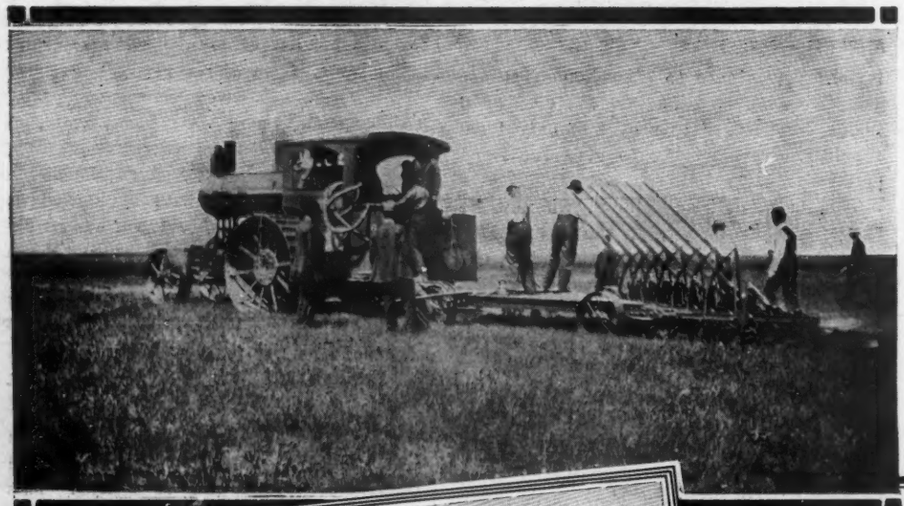
PISTON SPEEDS IN FEET PER MINUTE FOR DIFFERENT STROKES AND R. P. M.

	Stroke in Inches												
RPM	3	3¼	3½	3¾	4	4¼	4½	4¾	5	5¼	5½	5¾	6
200	100	108	116	125	133	141	150	158	166	175	183	191	200
400	200	217	233	250	267	283	300	317	333	350	367	383	400
600	300	325	350	375	400	425	450	475	500	525	550	575	600
800	400	434	466	500	534	566	600	634	666	700	734	766	800
1000	500	542	584	625	676	708	750	792	834	875	917	958	1000
1200	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
1400	700	766	816	875	934	992	1100	1108	1165	1225	1282	1342	1400
1600	800	868	932	1000	1068	1132	1200	1268	1332	1400	1468	1532	1600
1800	900	975	1050	1125	1200	1275	1350	1425	1500	1575	1650	1725	1800
2000	1000	1084	1168	1250	1352	1416	1500	1584	1668	1750	1852	1916	2000

The Realm of the

Agricultural Motors in Annual Test

Twenty-Nine in Winnipeg Competition



UNUSUAL interest was shown in the fifth annual contest of agricultural motors, tractors and plows, held at Winnipeg, July 2 to 20, there being twenty-nine entries and enough of plowing during the competition to turn over 320 acres of land.

From very small beginnings, this annual affair has become a classic in its field, and drew a large number of those interested in the agricultural end of the motor industry to the Canadian city for the days of the contests.

Both steam, kerosene and gasoline machines were pitted against each other on the test field, hauling huge gangs of plows for an average pull of 6 miles. A most

1—Big Case steamer plowing, gold medal winner in class H, 100-horsepower and over. 2—Small Case gasoline tractor commencing plowing test gold medal winner in class B. 3—Sixty-horsepower new Case gasoline tractor. 4—Eighty-horsepower Case, champion of steam class, winner gold medal class G. 5—Hackney plow, non-contestant. Three plows are used, placed under body of engine forming unit power plant, one man operating. These machines were very much in the limelight in the Winnipeg competition

Commercial Car

Case Company Captures Many Medals

American Concern Makes Fine Showing

unusual sight was the big four-cylinder tractor made in St. Paul and fitted with self-steering apparatus and pulling as many as twelve plows at once. While this machine did not win any prizes, being in a class apart, it was the center of attraction for a large crowd.

The grand prize for best all-around performance went to the Rumely oil-pull tractor of class E, rating over 500 cubic feet of piston displacement per minute, while gold medals were won by the Case and Aultmann-Taylor in the gasoline class, the International and the Rumely in the kerosene class, and the Case in the steam division. The judges were selected largely from the agricultural college faculties of

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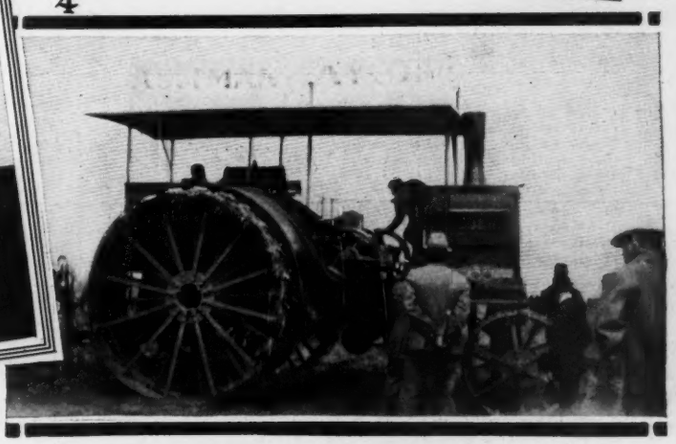


1—Rumely oil-pull, gold medal winner and grand champion, class e, kero sene engines over 500 cubic feet piston displacement per mile. 2—International Harvester Co. 30-horsepower Titan, silver medal, class C, gasoli ne engines. 3—International Harvester 45-horsepower Mogul double-opposed engine, gold medal winner. 4 —Aultman-Taylor gold medal w inner, gasoline-burning engine 36-horsepower four-cycle. 5—Twenty-horsepower Avery, new departure for Avery who has been steam engine ma ker up to now. Plows are new Avery self-lift, operated by driver.

the adjoining states and provinces.

The tractor contests resulted in the following awards:

Class B, gasoline engines whose cubic piston displacement is 300 cubic feet per minute and under—Case, gold medal, first; Goold, Shapley & Muir, silver medal, second; Avery, bronze medal, third.

Class C., gasoline engines whose piston displacement is 500 cubic feet per minute and over—Aultmann-Taylor, gold medal, first; International Harvester, silver medal, second; Holt caterpillar, bronze medal, third.

Class D., kerosene engines whose piston displacement is 500 cubic feet per minute and under—International Harvester, gold medal, first; Rumely, silver medal, second; Avery, bronze medal, third.

Class B., Kerosene engines whose piston displacement is over 500 cubic feet per minute—Rumely, gold medal, first; Aultmann-Taylor, silver medal, second; International Harvester, bronze medal, third.

Class F., steam engines 60 horsepower or under—Case, gold medal, first.

Class G., steam engines over 60 and under 100 horsepower—Case, gold medal, first.

Class H., steam engines 100 horsepower or over—Case, gold medal, first; Sawyer-Massey, silver medal, second.

Engine gang plow contest—Rumely, first; Avery Self-Lift, second.

The Rumely oil-pull engine, winner of the gold medal in class E, was awarded the Grand Champion certificate as being the engine to make the best showing on all points in the contest.

The rules and classifications as set forth in this contest are interesting, and were carried out as follows:

CLASSIFICATION.

Class 76—

a—Gasoline engines whose piston displacement is 300 cubic feet per minute and under.

b—Gasoline engines whose piston displacement is over 300 and under 500 cubic feet per minute.

c—Gasoline engines whose piston displacement is 500 cubic feet per minute and over.

d—Kerosene engines whose piston displacement is under 500 cubic feet per minute.

e—Kerosene engines whose piston displacement is 500 cubic feet per minute and over.

The piston displacement to be calculated on a basis of a piston speed of 700 feet per minute, and to be equal to a total piston area in square feet multiplied by 700.

Steam Engines.—Where A—piston area in square feet; P—boiler pressure and 450 is taken as a standard speed.

OFFICIAL RESULTS IN AGRICULTURAL MOTOR COMPETITION HELD IN

CLASS 76 SECTION	Entry Number	MAKER'S NAME	ECONOMY BRAKE TEST: H.P. Hours per Unit of Fuel	H.P. Hours per Unit of Water	Steadiness, Vibration, Condition	Total	MAXIMUM BRAKE TEST: H.P. Maximum H.P. Economy	Evenness of Load	Condition of Engine	Total
Highest Possible No. of Points		Internal Comb.	145	15	30	190	35	20	10	65
		Steam	140	35	15	190	35	20	10	65
B. Gasoline	2	Canadian Heer	125.5	15	20.4	169.9	17	14	9	40
	3	Avery	124	7.2	23.6	154.8	25	18	10	53
	4	J. I. Case	128	14.2	23.9	166.1	14	18	10	42
	5	Goold, Shapley, Muir	105.7	15	18.3	138.9	15	17	10	42
	6	International Harvester Co	132.8	6.8	18.8	158.4	23	15	9	47
C. Gasoline	7	Sawyer-Massey	97.8	14	26.4	138.2	23	18	10	51
	8	International Harvester Co	134.1	6.1	19.5	159.7	18.5	19	10	47.5
	9	International Harvester Co	123	6.6	21.5	151.1	23.5	17	10	50.5
	10	Goold, Shapley, Muir	withdrawn							
	11	Canadian Holt	108.8	15	25	148.3	20.5	17	9	46.5
	12	Aultman-Taylor	145	5.9	24.4	175.3	23	18	10	51
	13	J. I. Case	104.3	6.4	22.6	133.3	22.5	19	10	51.5
	15	Diamond Iron Works	88.7	14.5	25	128.2	18	17	10	45
D. Kerosene	1	Canadian Heer	114.2	14.2	20	148.4	17.5	14	9	40.5
	16	Rumely	92.1	7.3	20.3	119.7	29.5	19	10	58.5
	18	International Harvester Co	124.6	6.1	21.3	152	18.5	19	10	47.5
	19	Avery	135.5	11.2	21	167.7	14	17	8	39
E. Kerosene	21	International Harvester Co	131.4	6.5	23	160.9	21	19	10	50
	22	Aultman-Taylor	138	6.4	27.7	172.1	18.5	18	10	46.5
	23	Rumely	145	9.9	20.9	175.8	31	16	10	57
	24	J. I. Case	86.9	5.9	23.9	116.7	25.5	17	9	51.5
F. Steam	25	J. I. Case	100.3	29.6	13.5	143.9	33	15	10	58
G. Steam	26	J. I. Case	111.3	33.5	14.1	158.9	21	18	10	49
H. Steam	27	J. I. Case	140	15	7.45	167.45	27	18	10	55
	29	Sawyer-Massey	99.8	34.8	8.95	143.55	23	14	10	47

Cause of Penalties: No. 11 for withdrawing from brake test to adjust engine; No. 19 for company's dynamometer readings were being taken.

OFFICIAL RESULTS IN THE PLOWING TESTS OF THE AGRICULTURAL MOTOR COMPETITION

CLASS 76 SECTION	Entry Number	MAKER'S NAME	Number of Bottoms	Width of Plow, Inches	Maker of Plow	Miles Traveled (Not Including Turns)	Length of Furrow, Feet	No. of Times Across Field	Average Width of Plowed Land, Feet	Acres Plowed	Average Depth, Inches	Total Time Required, Minutes	Time Lost Due to Plows, Etc., Minutes	Time Lost Due to Engine, Minutes	Time Required Turning Minutes
B—Gasoline	2	Canadian Heer	4	14	Crockshutt	6	3955	8	37.6	3.41	3.5	238.5	14.0	4.5	7.3
B—Gasoline	3	Avery	4–5	14	Avery	6	3955	8	42.9	3.90	3.5	186.0	5.5	0	5.7
B—Gasoline	4	J. I. Case	5	14	Case-Sattley	6	3955	8	47.0	4.27	3.5	188.2	0	0	6.0
B—Gasoline	5	Goold, Shapley, Muir	4	14	Cockshutt	6	3955	8	37.5	3.41	3.75	184.0	13.0	0	8.0
B—Gasoline	6	International Harvester Co	5	14	Oliver	6	3955	8	46.4	4.21	3.5	181.0	4.0	0	7.5
C—Gasoline	7	Sawyer-Massey	5	14	Deere	6	3955	8	46.7	4.24	3.5	202.8	4.5	0	8.5
C—Gasoline	8	International Harvester Co	9–10	14	P. & O.	6	3955	8	88.1	8.00	3.5	200.0	3.0	0	9.5
C—Gasoline	9	International Harvester Co	8	14	Oliver	6	3955	8	75.8	6.79	3.5	185.4	5.2	0	8.5
C—Gasoline	10	*Goold, Shapley, Muir													
C—Gasoline	11	Canadian Holt	7–8	14	Cockshutt	6	3955	8	67.6	6.14	3.25	177.0	0	0	8.0
C—Gasoline	12	Aultman-Taylor	9	14	Deere	6	3955	8	81.2	7.38	3.5	153.0	0	0	9.0
C—Gasoline	13	J. I. Case	10	14	Case-Sattley	6	3955	8	92.1	8.36	3.5	212.0	4.0	3.0	7.0
C—Gasoline	15	Diamond Iron Works	10	14	Deere	6	3955	8	90.9	8.25	3.5	211.5	1.5	2.0	9.5
D—Kerosene	1	*Canadian Heer													
D—Kerosene	16	Rumely	5	14	Rumely	6	3955	8	45.5	4.13	3.5	204.0	7.0	0.7	8.0
D—Kerosene	18	International Harvester Co	4	14	P. & O.	6	3955	8	34.7	3.16	3.5	193.0	0	0	14.0
D—Kerosene	19	Avery	4	14	Avery	6	3955	8	37.3	3.39	3.5	184.0	2.5	2.2	6.8
E—Kerosene	21	International Harvester Co	8	14	P. & O.	6	3955	8	73.6	6.68	3.61	184.0	4.0	0	7.6
E—Kerosene	22	Aultman-Taylor	7	14	Deere	6	3955	8	62.9	5.71	3.5	155.0	0	3	7.3
E—Kerosene	23	Rumely	8–9	14	Rumely	6	3955	8	77.4	7.03	3.6	217.7	8.4	0	17.6
E—Kerosene	24	J. I. Case	8	14	Case-Sattley	6	3955	8	76.7	6.96	3.5	206.0	3.0	0.5	13.4
F—Steam	25	J. I. Case	6	14	Case-Sattley	6	3955	8	56.5	5.13	3.4	179.9	7.7	8.6	7.4
G—Steam	26	J. I. Case	10	14	Case-Sattley	6	3955	8	93.3	8.47	3.5	171.0	2.2	0	7.0
H—Steam	27	J. I. Case	12	14	Deere	6	3955	8	114.2	10.37	3.5	178.0	7.0	0	7.0
H—Steam	29	Sawyer-Massey	10	14	Case-Sattley	6	3955	8	89.4	8.12	3.5	186.3	7.5	3	11.8

*Withdrawn †Gasoline ‡Kerosene

(f) $\frac{Ax450xP}{500}$ = 60 or under. (g) $\frac{Ax450xP}{500}$ = over 60 and under 100 (h) $\frac{Ax450xP}{500}$ = 100 or over

CONNECTION WITH CANADIAN INDUSTRIAL EXHIBITION, WINNPEG, JULY, 1912

PLOWING TEST								DESIGN AND CONSTRUCTION							
140	15	25	15	10	.....	10	215	15	10	5	30				
120	35	25	15	5	5	10	215	15	10	5	30				
Drawbar H.P. Hours per Unit of Fuel	Drawbar H.P. Hours per Unit of Water	Acres Plowed per Hour per Econ. Brake H.P.	Quality of Plowing	Distance Traveled Without Replenishing Fuel	Distance Traveled Without Replenishing Water	Condition of Engine	Total	Accessibility	Protection of Working Parts	Ease of Manipulation	Total	Points Penalized	Total Points	Rank	Entry No.
82.4	14.5	23.4	9	4.4	.....	10	143.7	10.5	6	4.25	20.75	....	365.35	5	2
92.3	11.5	24.7	10	4.5	.....	10	153	8.25	6.25	4.25	18.75	....	379.55	3	3
122	14.5	19.1	9.75	10	.....	10	185.35	6.75	6.75	4.75	18.25	....	411.7	1	4
121.3	14.5	17.8	9.5	7.6	.....	10	180.7	12.75	6	4	22.75	....	384.35	2	5
87.6	5	20.2	8.5	7.8	.....	10	138.9	11	6.75	4.25	22	....	366.3	4	6
97.4	14.5	19.7	8.5	4.9	.....	10	155	8.75	6.75	4.5	20	....	364.2	5	7
120.2	7.5	21.8	9.75	6.3	.....	10	175.55	11	5.75	4.25	21	....	403.75	2	8
88	13.5	22.9	7.75	4.1	.....	10	146.25	9.5	7.25	4.75	21.5	....	369.35	4	9
.....	.....	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	....	.....	..	10
129.8	15	23	10.25	6.5	.....	10	194.55	11.25	5.25	3.75	20.25	29	380.6	3	11
140	8	25	9.25	6.9	.....	10	199.15	10.75	7	4.5	22.25	....	447.7	1	12
95.2	7.5	21.8	10.25	8.2	.....	10	152.95	10.75	8.5	4.25	23.5	....	361.25	6	13
90.4	15	22.9	9.25	3.9	.....	10	151.45	8.5	8.75	3.5	20.75	....	345.4	7	15
withdrawn		.....	.....	.....	.....	...	.....	10.5	6	4.25	20.75	....	.....	..	1
93.1	10	24.6	10.5	4.6	.....	10	152.8	11.5	7	4.5	23	....	354	2	16
118.6	7.5	19.8	10.25	10	.....	10	176.15	10.5	7.25	4.75	22.5	....	398.15	1	18
70.6	13	20.4	9	3.5	.....	10	126.5	8.25	6.25	4.25	18.75	15	336.95	3	19
100.5	11.5	22.8	10.5	4.2	.....	10	159.5	9.5	7.25	4.75	21.5	....	391.9	3	21
122.2	7.2	20.8	7.5	6.9	.....	10	174.6	10.75	7	4.5	22.25	....	415.45	2	22
140	12	20.4	11.25	9.8	.....	10	203.45	10.25	6.75	4.5	21.5	8	449.75	1	23
75.8	4.8	19.9	9	7.1	.....	10	126.6	10.75	8.5	4.25	23.5	....	318.3	4	24
81.5	23.5	22.7	9.5	3.1	4.3	10	160.6	13.5	8	4	26.5	....	389	1	25
120	35	19.6	10.5	3.5	4.5	10	203.1	13.5	8	4	26.5	....	437.5	1	26
116.7	29.6	17.1	8.5	5	4.5	10	191.4	15	8	5	29	....	442.85	1	27
76.9	28.5	18	11	1.5	5	10	150.9	14	8	4	27	....	364.15	2	29

representative talking to operator during the brake test; No. 23 for setting plows deeper when

Prizes in each class shall consist of:
First prize.....Gold medal
Second prize.....Silver medal
Third prize.....Bronze medal

In all classes where there is no competition a diploma of award only may be given, upon which will be set forth, together with the number of points scored, that it was the only entry in the class.

ENTRIES.

2—All entries must be made on or before June 1, 1912, and must be made on the official entry form, with all data filled in accurately and accompanied with an entry fee of $50 for each entry.

3—All entries must be accompanied by an affidavit that the information therein is true and that the engine in question is from their regular stock, not being built specially for competition. A blue print or photograph of blue print, of the boiler, with the approval stamp of the Alberta inspector thereon, must also accompany the entry.

4—Each entry shall be allotted an official number, which shall be displayed during the competition.

5—Any firm or individual shall not enter more than one engine in each class unless the engines be radically different in construction. Such difference being understood to apply to the power equipment and not to piston displacement.

6—If the same type of engine is entered in both gasoline and kerosene classes, the identical engine may be used and operated in both classes, provided no change is made of parts or equipment, but there shall be a separate fee for each such entry.

7—Should the judges find the entry data inaccurate in any particular, they may, at their discretion, rule the engine out of the contest. Competitors shall state at time of making entry the number of bottoms with width of furrow they purpose using in plowing test, so that ground may be surveyed in good time.

CONDITIONS.

8—The fuel shall be that furnished by the exhibition association at current prices at Winnipeg, approximately:
Gasoline, 19½c per gallon of 277 cubic feet.
Kerosene, 14½c per gallon of 277 cubic feet.
Soft coal, $8.50 per ton of 2,000 pounds.
Wood, $6 per cord.

9—Each competitor must have sufficient staff for the care and running of his own entry.

10—Two men only, except observers, will be

HELD IN CONNECTION WITH CANADIAN INDUSTRIAL EXHIBITION, WINNIPEG, JULY, 1912

Actual Time Plowing, Minutes	Acres Plowed per Hour	Miles Traveled per Acre Plowed	Average Drawbar Pull, Pounds	Average Drawbar Horsepower	Fuel Used, Including Turns, Pounds	Drawbar Horsepower Hours per Unit of Fuel	Lbs. Fuel Used per Acre Plowed	Water Used, Pounds	Lbs. Water Used per Acre Plowed	Average Drawbar Pull per 14-in. Plow	Drawbar Horsepower per Acre per Hour	Possible Miles Traveled Without Replenishing Fuel	Possible Miles Traveled Without Replenishing Water	Possible Acres Plowed Without Replenishing Fuel	Possible Acres Plowed Without Replenishing Water	Lbs. Water per Drawbar Horsepower Hour	Cost of Fuel per Acre Plowed, Cents	Entry Number	Draw-bar Horsepower Hours
212.8	0.96	1.76	3010	13.56	70.5	0.682	20.67	4.5	1.32	752	14.09	14.10	91.6	8.0	16.1	.094	57.6	2	48.1
174.8	1.34	1.54	3135	17.22	65.5	0.765	16.79	91.5	23.46	660	12.85	14.56	13.9	9.5	90.0	1.83	46.8	3	50.1
182.2	1.41	1.41	4450	23.41	70.25	1.012	16.45	4.25	0.99	890	16.64	32.00	322.0	22.4	22.9	.060	45.8	4	71.1
163.0	1.26	1.76	3680	21.64	58.5	1.005	17.15	10.75	3.15	920	17.24	24.20	67.5	13.8	38.4	.183	47.8	5	58.8
169.5	1.49	1.42	3610	20.42	79.5	0.726	18.88	302.75	71.90	722	13.70	25.1	20.0	17.6	14.0	5.25	52.6	6	57.7
189.8	1.34	1.41	4985	25.20	98.75	0.807	23.29	9.5	2.24	977	18.79	15.7	182.0	11.1	128.5	.119	64.9	7	79.7
187.5	2.56	0.75	6669	34.10	107.0	0.996	13.38	420.0	52.50	684	13.31	20.3	16.5	27.0	22.0	3.94	37.3	8	106.6
171.7	2.37	0.88	6430	35.91	141.0	0.729	20.76	87.75	12.92	804	15.13	13.1	61.8	14.9	70.0	85.4	57.8	9	102.7
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	.....
169.0	2.18	0.98	6338	35.96	94.0	1.077	15.30	0	0	874	16.51	20.8	.....	21.3	.....	.....	42.6	11	101.3
144.0	3.08	0.81	7080	47.14	97.5	1.160	13.22	408.0	55.30	787	15.33	22.0	15.9	27.1	19.6	3.61	36.8	12	113.1
198.0	2.53	0.72	7700	37.29	155.75	0.789	18.63	488.5	58.43	770	14.72	26.2	13.0	36.6	18.0	3.97	51.9	13	123.0
198.5	2.49	0.73	7350	35.50	156.5	0.750	18.96	0	0	735	14.24	12.4	.....	17.0	.....	.....	52.8	15	117.4
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
188.3	1.32	1.45	4400	22.40	124.25	0.566	30.08	176.0	42.60	880	17.02	11.5	8.9	7.9	6.15	2.50	55.2	16	70.3
179.0	1.06	1.89	3450	18.48	76.5	0.721	24.21	223.5	70.72	863	17.45	25.2	12.7	13.6	6.66	4.05	44.4	18	55.1
172.5	1.18	1.77	2900	16.12	† 3.0 ‡105.0	0.429	31.85	50.0	14.74	725	13.67	8.8	25.5	5.1	14.4	1.08	58.4	19	46.3
172.4	2.32	0.90	6595	36.67	† 1.0 ‡171.5	0.611	25.82	196.75	29.45	828	15.76	10.7	27.5	12.0	30.6	1.87	47.4	21	105.4
144.7	2.37	1.05	5716	37.88	† 8.0 ‡115.0	0.743	21.54	374.5	65.58	817	16.00	17.5	17.3	16.6	16.5	4.10	39.5	22	91.3
191.6	2.20	0.85	6880	34.42	‡129.25	0.851	18.38	167.5	23.82	834	15.62	24.7	25.0	29.1	29.0	1.52	33.7	23	109.9
189.1	2.21	0.86	6550	33.22	† 0.25 ‡227.0	0.461	32.65	619.0	88.93	819	15.04	18.0	10.1	20.8	11.8	5.91	59.9	24	104.7
156.2	1.97	1.17	5060	31.06	765	10.57	149.12	5050	984.4	843	15.75	7.8	1.7	6.7	1.45	62.45	63.4	25	80.9
161.8	3.13	0.71	8050	47.69	826.5	15.56	97.58	6780	800.4	805	15.18	8.8	1.8	12.4	2.5	52.70	41.5	26	128.6
164.0	3.79	0.58	9750	57.00	1030.0	15.13	99.32	9704	935.8	812	15.02	12.6	1.8	21.8	2.3	62.28	42.2	27	155.8
164.0	2.97	0.74	7900	46.17	1266.5	9.97	155.97	7970	981.5	790	15.55	3.7	2.0	16.9	2.7	63.13	66.3	29	126.2

allowed on the steam engines during a test; one an engineer and one a fireman.

11—Two men will be allowed to start the internal combustion engines; after starting, one man only, except observers, will be permitted on the engine. If more men are needed the engine will be penalized 10 points for each man.

12—No other person to be allowed on or close to the engine except the official judges and observers.

13—The names of the operators to be furnished the judges at commencement of test, and the same operators to handle the engines during all tests.

14—One man only, except the official judges and observers, will be allowed on the plows.

15—The plows, belts, chains, water-tanks, sufficient recording dynamometers for their engines, with sufficient charts and such other things as may be required during the tests, must be supplied by the contestants.

16—All instruments, including dynamometers, shall be deposited with the judges on the arrival of the engines on the exhibition grounds, for testing, and shall remain in their possession until all tests are completed.

17—All engines must be on the grounds not later than July 3, 1912.

18—Each engine shall be allotted a certain space on the grounds, where the engines shall be exhibited at all times except when being tested.

TEST.

19—Test to comprise brake-test, plowing-test, and such other tests as the judges deem essential.

20—The judges may test the engines in any order that may to them seem desirable. The contestants will be given 1 hour's notice when to be ready for test.

21—The rules of the province of Alberta with regard to boilers and engines shall govern the pressures, etc., allowed.

22—Provision shall be made so that a standard steam gauge can be applied to all boilers during the test.

23—Before commencing the tests, the pop valves and steam gauges shall be inspected by the judges and sealed, and any sediment or foreign matter that may get into these parts after being sealed shall not be taken into consideration.

24—Any engine failing to complete any test shall be disqualified.

25—Contestants shall be prepared to assist the judges and their observers in taking dimensions, removing parts for inspection, and any other work that may be necessary for a complete inspection and test.

26—The brake test shall consist of a 2-hour economy test. During this test the engines are to run at their greatest load consistent with economy.

27—Competitors will be allowed 15 minutes after they have lined up to the brake to try out their engines, and to state the amount of load they wish to carry. After the competitor has stated the load he wishes to carry, the operators will keep the brake as near that load as possible for two hours, and no change will be made.

Careful measurements of the fuel and water used will be taken and the condition of the engine noted.

28—After the 2 hours' run a test will be made of the maximum horsepower the engine will develop for 30 minutes; the competitor stating the maximum load he wishes to carry, and careful measurements again being taken of all fuel and water.

29—Plowing test may extend over a period of 5 hours or longer, if deemed necessary by the judges, and each engine shall be allotted the same number of rounds. The contestants may use any kind of plow they wish. The depth of plowing to be uniform, and as directed by the judges. A recording dynamometer will be placed between the engine and the plow, which will accurately record the pull. Careful measurements will be taken of the fuel and water used; the acres plowed; the draw-bar pull; the fuel per acre; the distance traveled without replenishing, and such other data as the judges deem essential. At least one 2-hour chart spread over the time of plowing must be made by each contestant engine.

30—In connection with the plowing test the quality of plowing which is to be judged by prominent agriculturalists shall have special reference to: evenness of depth of furrow, uniformity of thickness of the furrow slice; straightness of furrow; finish at the ends and condition of the back furrow. In connection with the evenness of depth of furrow; the exact depth prescribed by the judges must be maintained throughout the test; the number of furrows opened at the commencement of each round shall be carried through to the end.

31—Design and construction.—Under this head will be considered the protection of the working parts from mud and dust; dustproof bearings; accessibility of all parts, such as valves, igniters, bearings; ease of manipulation, such as starting and stopping, reversing and the general handling of the engine.

32—Contestants will be prepared to take down such parts of their engines as may be necessary in actual practice in the field.

TRANSCONTINENTAL ALCOITES INSPECTING BRIDGES

33—General.—It is to be expressly understood and agreed by the manufacturer that the engines entered in the competition are of the same material and construction as those he is selling in the open market. Only such pressures and speeds will be allowed during the tests as are used under ordinary working conditions. The judges may limit the speed or pressure of any engine when they deem it necessary to a fair test. Contestants must submit their dynamometers, steam gauges, etc., to such tests as the judges deem necessary to assure them of their accuracy.

34—The competitors, upon being given notice of the testing of their engines, are to make all arangements for water, belts, etc., so that as little delay as possible will result.

35—The folowing are points upon which the awards will be made:

SCORE CARD

Brake Test, 190

Horse power hours per uit of fuel

	Internal Combustion Engines	Steam Engines
Horse power hours per unit of fuel used	145	140
Horse power per unit of water used	15	35
Steadiness of running vibration condition of engine	30	15
	190	190

Maximum Test, 65

Economical load compared with maximum	35	35
Evenness of load	20	20
Condition of engine	10	10
	65	65

Plowing Test, 215

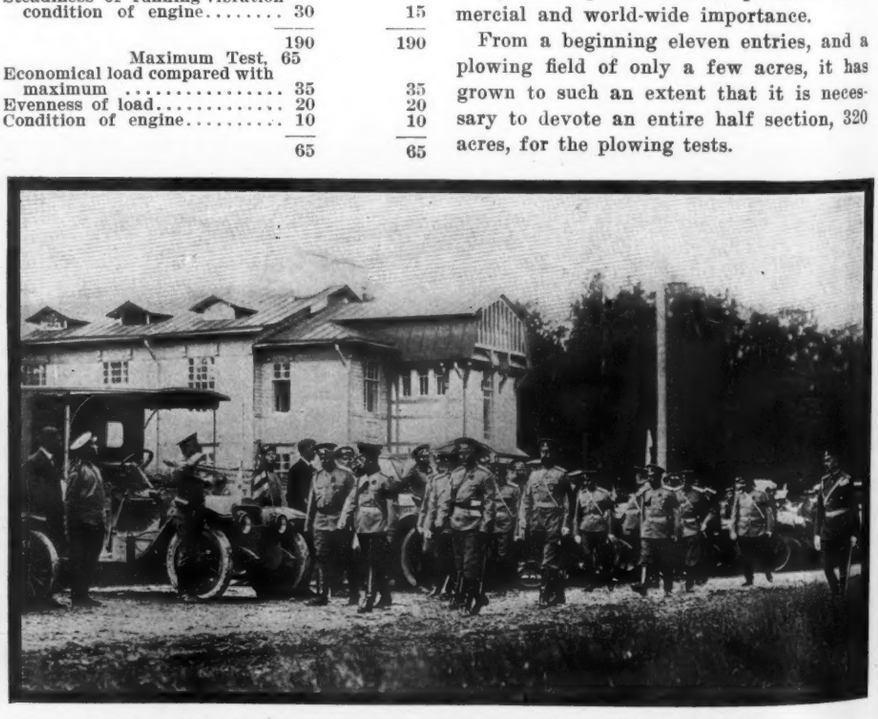
Draw-bar h.p. hours per unit of fuel	140	120
Draw-bar h.p. hours. per unit of water	15	35
Acres plowed per hour per economy brake horse power	25	25
Quality of plowing	15	15
Distance travelled without replenishing fuel	10	5
Distance travelled without replenishing water	..	5
Condition of engine, etc	10	10
	215	215

Design and Construction, 30

Accessibility	15	15
Protection of working parts	10	10
Ease of manipulation	5	5
	30	30

The agricultural motor competition at Winnipeg was first instituted as an experimental feature of the great exhibition and now, in the fifth year of its existence, stands pre-eminent in point of commercial and world-wide importance.

From a beginning eleven entries, and a plowing field of only a few acres, it has grown to such an extent that it is necessary to devote an entire half section, 320 acres, for the plowing tests.



CZAR NICHOLAS OF RUSSIA APPROACHING WHITE SQUADRON

TRANSCONTINENTAL ALCO CROSSING A WESTERN BRIDGE

The effect on the tractor industry in bringing these leviathans of the farm into direct competition with one another has been to promote some of the greatest possible improvements, not only in the engines but also in the plowing outfits. The agriculturists for whose especial benefit these contests were first instituted have benefited incalculably, and the elaborate records published by the judges have been in request the world over.

A very few years ago, steam plowing was merely a doubtful experiment. Today thousands of acres are being plowed, and steam and gasoline tractors are taking the place of the horse on all the big farms throughout western Canada. Three years ago there were no other engine gang plows used in the tests than those made by the Cockshutt Plow Co. and the John Deere Plow Co.; but in the 1912 tests no fewer than ten different engine gang outfits were utilized in the tests, showing that the competition has had the effect of quickening interest in this important feature of the annual test. Another improvement that has come about has been the improvement of the engine gangs so that in place of having a plow set of six bottoms cast integral, and the failure of any one of which would put the outfit out of business for half a day, they are now made with each plow a separate unit, so that the work of detaching a damaged blade is only a matter of a few minutes.

This was forcibly brought to the attention of those following the Rumely oil-pull engine through its plow test, as one of the plows struck a buried rock with the result that the standard was broken. The broken plow was removed and a new one fitted, and the engine again on the test, all in the short space of 5 minutes.

An added feature of interest to this year's tests was the engine gang plow competition, when the various developments in the big plow outfits were tested to show the farmer what could be accomplished with a thoroughly modern outfit.

The points on which the judges make the award are: Draft, evenness of furrow depth, lay of furrow slices, evenness of cut of inside plow, ease of adjustment and manipulation of plows in and out at ends, straightness of furrows, and stops attributable to plow.

CZAR NICHOLAS INSPECTING WHITE IN RUSSIAN TRIALS

WHITE IN RUSSIAN TRIALS

To determine the adaptability of motor vehicles for army service in all of its branches the Russian government recently held a reliability run in which the American White carried off high honors. The route covered started at St. Petersburg, circled around through Moscow, and then returned over a different course to the Russian capital, the entire distance traversed amounting to about 1,960 English miles. In many places there were no roads at all, the course being across sand hills, over fields and ploughed ground and through forest trails.

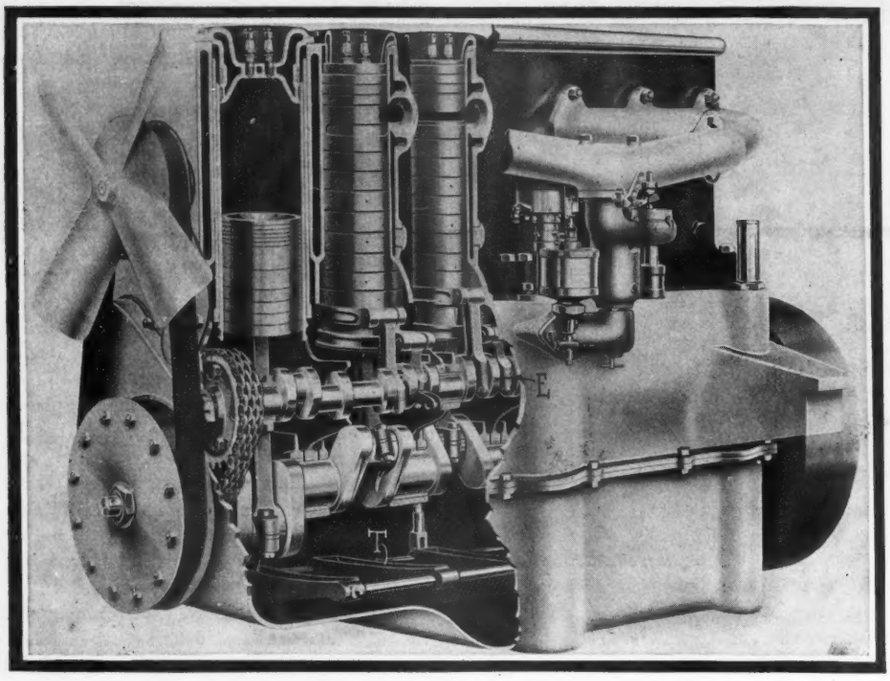
Forty-five cars and trucks started from St. Petersburg on June 6. European motor vehicle production was represented by Mercedes, Benz, Napier, Saurer, Adler, Clement, Lancia, Berliet, Charron, Laurin, Buire, Vauxhall, and others. The American White squadron was made up of two five- passenger 30-horsepower touring cars, two 30-horsepower field ambulances, using the regular White ¾-ton capacity truck chassis, and 1½-ton capacity 30 horsepower truck, fitted with tank body for carrying the fuel supply for the tour.

The trials ended in St. Petersburg on June 23, after 17 days of hard service. The last 3 day's run was made at high speed over hard, rough roads, and was extremely exacting. Thirty-five cars finished the trip, among which were the five White contestants, with the record for a lower consumption of gasoline and oil than any of the European cars. All five Whites are reported to have gone through the entire trip without mechanical trouble of any description. At the close of the run all of the surviving contestants were assembled at Peterhoff, where they were personally inspected by the czar of Russia, the minister of war and the high officials of the Russian army. The White squadron, on account of its performance, came in for the lion's share of the emperor's attention.

After the royal inspection all of the contesting cars were completely dismantled and every part was subjected to the most careful scrutiny for wear and deterioration. The commission of experts which conducted this examination reported that every one of the five White cars and trucks was in perfect condition. This report was followed by the report of the army officials that the White cars were highly suitable in every respect for the requirements of the Russian army service and recommended that the entire five cars be purchased by the war department. The next day the victorious Whites became the property of the government.

Stoddard-Dayton in Four Models

Three Different Motor Types in 1913 Line—Improvements in Six-Cylinder Chassis



STODDARD-DAYTON KNIGHT SIX-CYLINDER MOTOR

Broken in to show sleeves, chain-driven miniature crankshaft with eccentrics E, and oiling system with moveable troughs T

WITH a six-cylinder Knight-engined car as its feature, the Stoddard-Dayton line continues for 1913 the four chassis models with three types of power plants, the Knight sliding-sleeve-valve motor, the valve-in-the-head motor, and the L-head motor cast in block. The latter type of motor has been used for several years and is employed in two popular-priced cars of 30 and 38 horsepower respectively. The valve-in-the-head motor, representing 8 years' development of the familiar Stoddard-Dayton rocker-arm valve operating mechanism, is retained with minor refinements for the 48-horsepower cars.

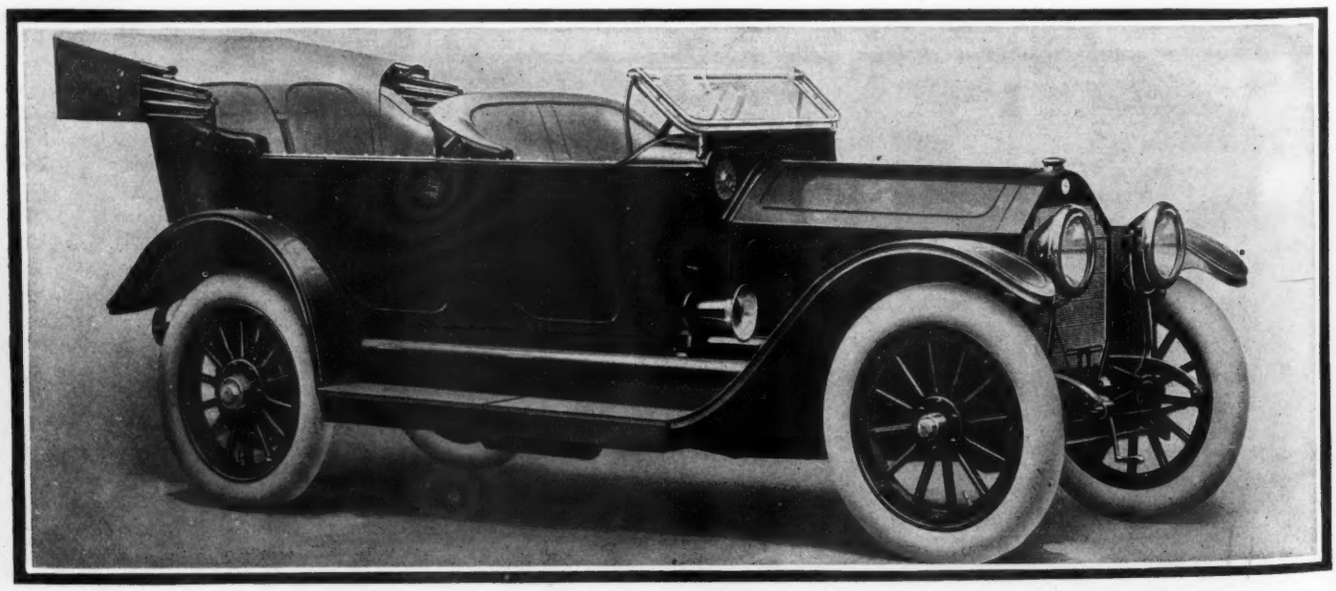
So far as the actual constructive changes for the new year are concerned these are very slight, particularly in the three poppet-valve models. Refinements of the 48, 38 and 30 consist chiefly in body changes with slight alterations in details to render them less in need of attention.

One model embodies the Knight sliding-sleeve-valve principle. That is a six-cylinder car with left-hand drive and center control. The effect of European tendencies is shown in the option of wire wheels on this model for 1913.

Changes in Stoddard-Dayton Knight

Among the structural changes in the Knight are a new design of I-beam front axle, an improved steering gear of the worm and sector type, mounted on roller bearings; a radiator of larger size and capacity; larger wheel hub bearings; new design of fenders and a simplication of the control system.

The motor conforms with the standard design for six-cylinder Knight engines. The cylinders of the Knight model are 4½ inches bore and 5½ inches stroke. The valve action is illustrated in the sectional view of the motor. A silent chain is used to drive the eccentric shaft which operates the sliding sleeves. In each cylinder are two reciprocating sleeves, one inside the other, and both moving up and down between the piston and cylinder wall. Each sleeve has two slots cut on opposite sides of its upper end. Corresponding slots are cut in the cylinder, those one one side constituting the intakes and those on the other the exhausts. The reciprocation of the sleeves as compared with that of the piston is very short—about 100 feet per minute at full speed. These sleeves are gray iron castings, finished inside and outside by grinding and on their outer surfaces oil grooves are cut to distribute the oil over the entire face of the sleeves. As is common with Knight types



STODDARD-DAYTON KNIGHT SIX TOURING CAR FOR 1913

Six-Cylinder Knight Engine Leader

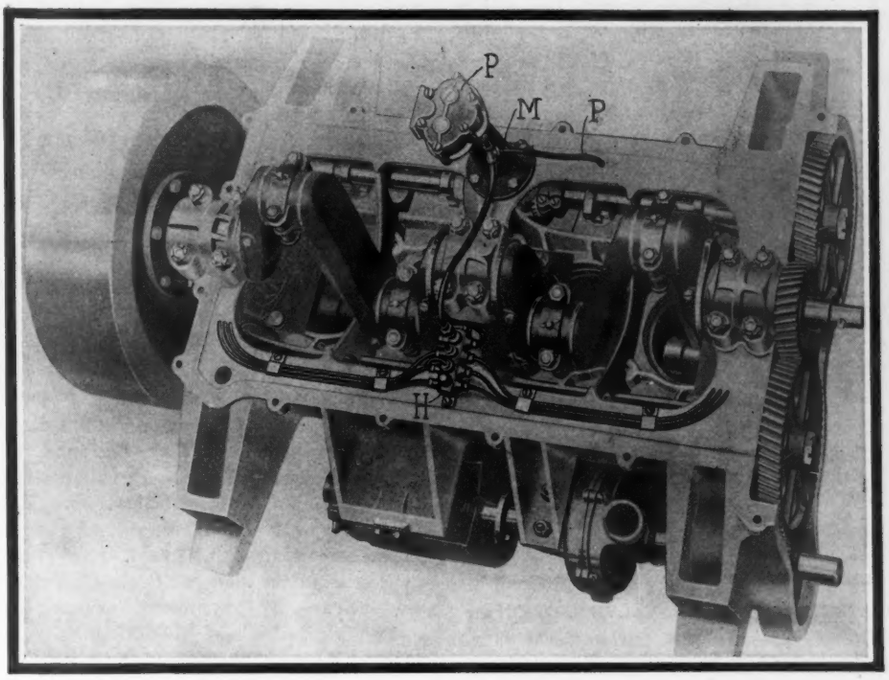
Refinements in Body Details Chief Changes in Design of Dayton Product

of motors, the cylinder heads are separate castings, which rest down in the tops of the cylinders, leaving an annular space between the heads and the cylinder walls for the sleeves to work in. At the cylinder head are compression rings to prevent loss of compression from the combustion chamber.

The cylinders are cast in two sets of three each, a practice that dominates six-cylinder design in Europe and permits the use of a seven-bearing crankshaft, precluding possibility of the crankshaft being distorted under any strain which could be imposed upon it. In addition to the use of seven bearings, whipping of the crankshaft is guarded against by the employment of a very heavy crankshaft and by offsetting it from the center of the cylinder. The motor is cooled by water circulation maintained by a pump and a cellular radiator.

Carburetion and ignition are given special attention as to details. In the upper half of the crankcase there are coreways through which air is passed before reaching the carbureter. In addition to eliminating the wheezing sound of air, which is out of place in a silent running car, these coreways also result in the air being heated by its proximity to the oil, which remains hot long after the engine has cooled. Greater ease in starting and additional power when running are thus gained. A Stromberg carbureter and Bosch double ignition is employed.

The lubrication system consists of movable dams or troughs immediately beneath each connecting rod. They are kept full and overflowing by a gear-driven pump. The rods have scoops which dip into the troughs, splashing the oil thoroughly. These troughs are connected to the throttle on the steering wheel so that they may be raised or lowered, increasing or reducing the amount of oil splashed, according to the speed of the car, the work it is performing and the position of the throttle.

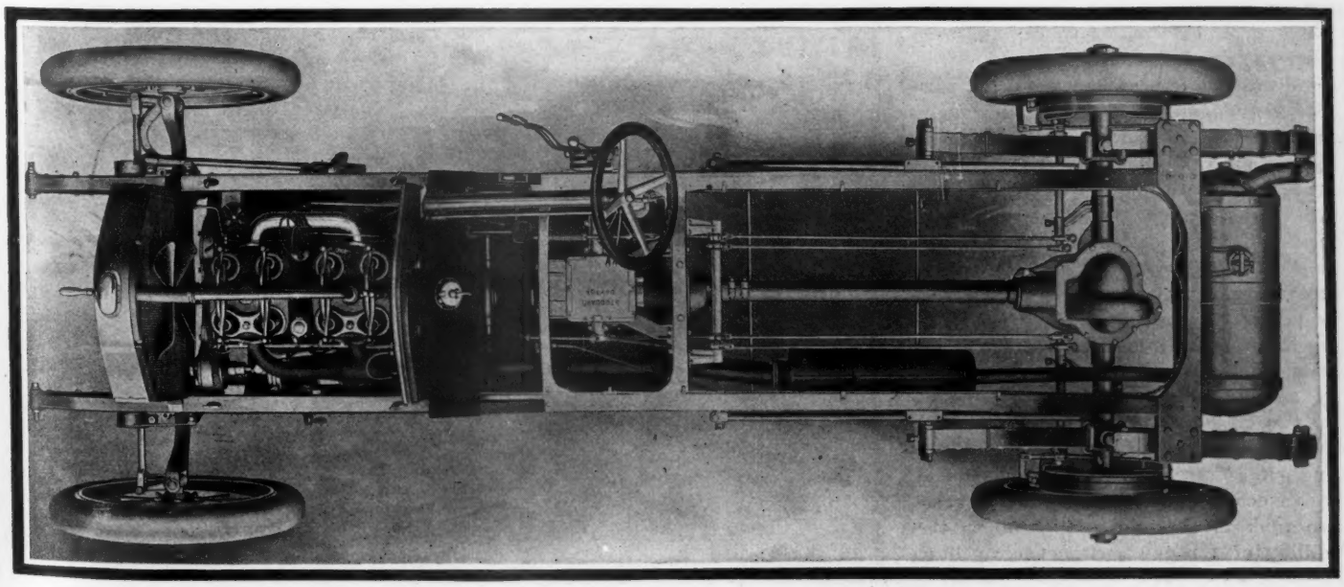


OILING SYSTEM ON STODDARD-DAYTON POPPET-VALVE MOTORS

Forced lubrication to all motor bearings by a pump P through main lead M to header H and thence to crankshaft and camshaft bearings

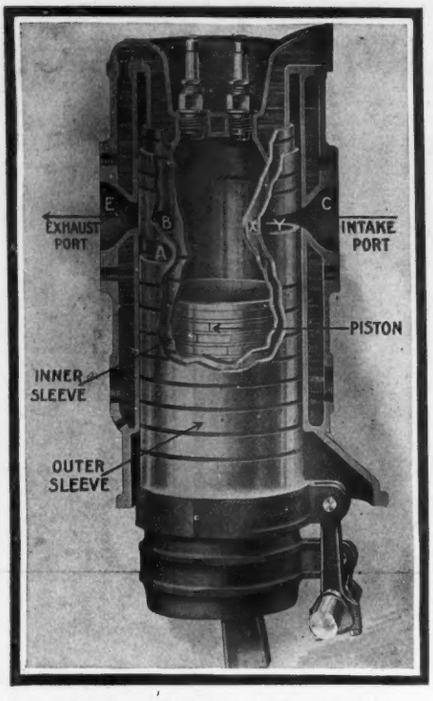
A cone clutch is used and the three-speed gearset is carried amidships. Power is transmitted through a propeller-shaft to the floating rear axle. Service brakes are external and emergency brakes are internal. The chassis has a wheelbase of 133 inches and tires are 37 by 5½ inches in size. Front springs are semi-elliptic and rear springs are three-quarter elliptic.

The other models have four-cylinder motors, but aside from general dimensions and engine design are much the same as the larger one. The two L-head motors are block castings, the 30 with



PLAN VIEW OF STODDARD-DAYTON 48 CHASSIS

Herreshoff 1913 Little Six



KNIGHT SLEEVE-VALVE ACTION

Fitting the engine cylinder closely, one within the other, with a film of oil between, are two sliding cylinders, and within the inner sleeve slides the piston. Each sleeve has two slots in it, one on each side. When slot Y in the outer sleeve comes opposite slot X in the inner sleeve, and opposite the intake port C, a charge of gas is drawn into the cylinder. After the explosion has taken place, the sliding of the sleeves brings the slot B in the inner sleeve opposite slot A in the outer sleeve, and right opposite the exhaust port E, allowing the burnt gas to escape through the exhaust manifold

WITHIN a month the Herreshoff Motor Co. will be in a position to make deliveries on what will be the smallest six-cylinder machine on the American market. The chief talking points of the new car are its 36-horsepower motor, four-speed gear-set, left-hand drive and center control, three-point suspension, 124-inch wheelbase and platform springs.

The motor is a monoblock type, as found on several other six-cylinder American cars which have made their appearance within the last year or two. The cylinders are of the T-head design, the exhaust valves being placed on the right side and the intake valves on the left. To economize space, the valve pockets are set diagonally, converging as they run into the cylinder heads. The cylinder dimensions are 3⅜ inches by 4½ inches, bore and stroke, respectively. These figures give a stroke-bore ratio of 1.33 to 1, which puts the engine in the long-stroke class. Valves are inclosed by two readily removable cover plates, which add to their silence as well as protect them against dust and grease. The inlet and exhaust valves are interchangeable, and are operated in the conventional way from the camshafts. The valve dimensions are: lift, $\frac{5}{16}$ inch; diameter, 1⅜ inch.

The camshafts, one on either side due to the T-head construction, are cut from solid pieces of carbon steel, the cams being integral with the shafts. Each is mounted on three bearings, which insures rigidity. The diameter of all three bearings is ⅞ inches. These have lengths of 3 inches, 2¼ inches and 2 inches, for the front, center and rear mountings, respectively.

The crankshaft, which is of large proportions, also is mounted on three plain bearings, the sizes of which are 1½ by 2 inches for the front, $2\frac{3}{16}$ by 3 inches for the center and 1½ by 3½ inches for the rear. The first figure in each case applies to the diameter of the bearing. Wrist pin bearings have a length of 1⅝ inches and a diameter of ¾ inch. The lower connecting rod bearings are $1\frac{11}{16}$ by 2⅛ inches in size. These all are plain types of white metal bearings. Pistons have a length of 3¼ inches, and they are supplied with three eccentric rings each. These rings are

cylinders 4 by 4½ inches bore and stroke and the 38 with cylinders 4½ by 5⅛ inches bore and stroke. The valve-in-the-head motor has cylinders cast in pairs. It has cylinders 4¾ by 5 inches in size. Wheelbases are 112 and 114 inches respectively for the L-type motor chassis and 130 for the valve-in-the-head motor chassis.

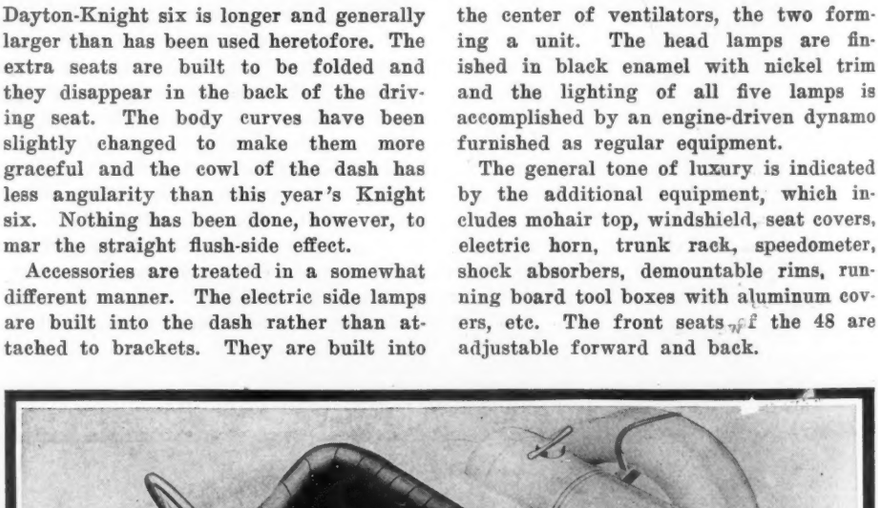
All types of standard bodies are fitted to the 1913 models, except the 30, which takes only a touring car and compartment roadster body. These roadsters, however, are one of the unusual examples of Stoddard-Dayton body design representing ideal conditions for the carrying of baggage and protecting it from dust and water.

Several improvements have been effected in the original design of these bodies. In the upholstering of the back of the seat there is a trap section which may be pulled forward, making a large opening into a compartment in the rear of the seats. This compartment is entirely closed by a metal deck and is roomy enough for two large suit cases and some smaller baggage. It may be opened without getting out of the car and the compartment design does not encumber the large gasoline tank in the rear. It simplifies the refilling of the tank without compelling passengers to alight.

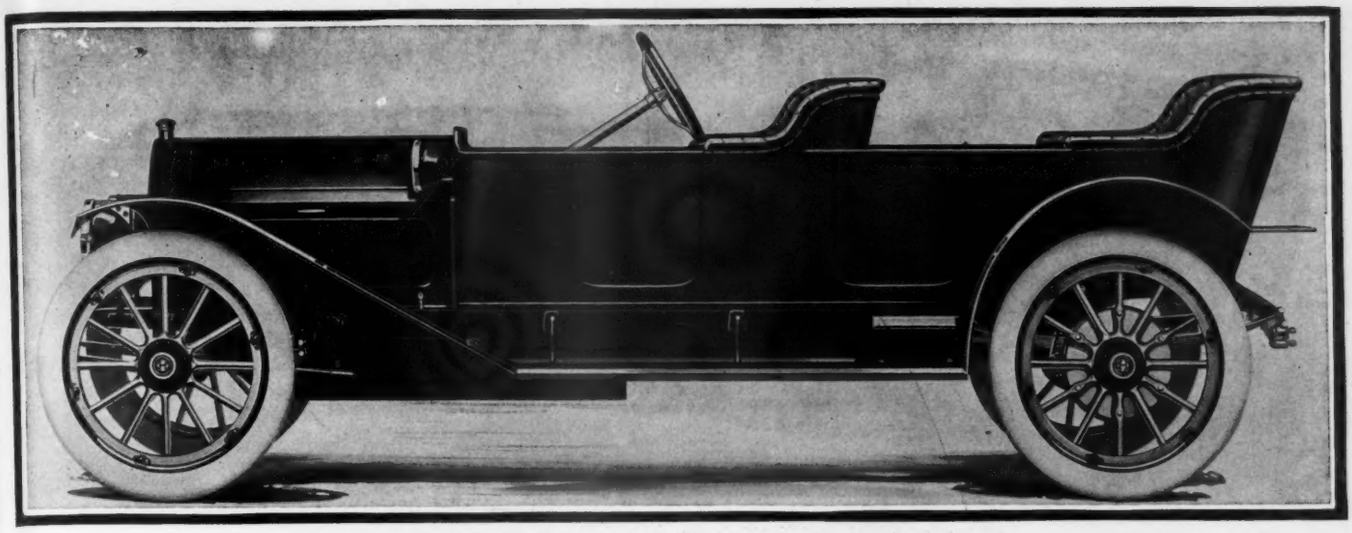
The new touring body of the Stoddard-Dayton-Knight six is longer and generally larger than has been used heretofore. The extra seats are built to be folded and they disappear in the back of the driving seat. The body curves have been slightly changed to make them more graceful and the cowl of the dash has less angularity than this year's Knight six. Nothing has been done, however, to mar the straight flush-side effect.

Accessories are treated in a somewhat different manner. The electric side lamps are built into the dash rather than attached to brackets. They are built into the center of ventilators, the two forming a unit. The head lamps are finished in black enamel with nickel trim and the lighting of all five lamps is accomplished by an engine-driven dynamo furnished as regular equipment.

The general tone of luxury is indicated by the additional equipment, which includes mohair top, windshield, seat covers, electric horn, trunk rack, speedometer, shock absorbers, demountable rims, running board tool boxes with aluminum covers, etc. The front seats of the 48 are adjustable forward and back.



WATERPROOF LUGGAGE COMPARTMENT OF 1913 STODDARD-DAYTON ROADSTERS



NEW HERRESHOFF BABY SIX, FIVE-PASSENGER TOURING CAR

diagonally split to prevent loss of compression and excessive oil.

Thermosyphon cooling is made use of, and augmented by large outlet and inlet water manifold connections and large fan at the front between engine and radiator. The waterjacket space communicates around all six cylinders, due to the monoblock casting, and this space has a width of 5/8 inch. The jacket wall thickness is approximately 3/16 inch.

The crankcase is made to extend back to the clutch, flywheel and gearset, this being in accordance with the unit power plant construction and the three-point suspension feature. The aluminum case fastens to the front frame crossmember at either side of the front of the power plant, and is supported at one point at its rear end on another crossmember.

Timing gears are placed at the forward end of the motor as in the average engine, and the magneto as well as the carbureter is mounted on the left side. The ignition is accomplished either through the use of the Delco system or the Bosch high-tension magneto system. This point has not been definitely decided as yet. The carbureter is of the Stromberg make, and has a single jet. The fuel is fed to it by gravity, the gasoline tank being placed under the front seat. An auxiliary air valve fitted with two adjustments is also supplied, and there is provision for shutting off the primary air tube in starting the motor. This allows a richer mixture to be supplied to the cylinders for easier starting.

The clutch, which is located in the flywheel, has thirty metal disks of saw-blade steel, which run in a bath of oil. Their engagement is accomplished through the agency of four springs placed uniformly around the clutch periphery.

As to the gearset, this is of the four-speed type, as already mentioned. The shifting of the gears is done through a lever in the center and which is operated by the right hand, the drive being on the left side. Direct drive is on third speed, and the gear ratio from engine to wheels is 4 to 1 on this gear. The transmission gears are of nickel steel and their shifting is made selective.

Passing back from the gearbox, the drive is of the straight-line construction, which is believed by the Herreshoff concern to save much in efficiency of power transmission from motor to road wheels. The propeller shaft is of chrome nickel steel, as are all power transmitting shafts. The propeller shaft has a diameter of 1⅛ inch and the rear axle shafts have a diameter of 1¼ inch. The rear axle is of the semi-floating type and is of ample proportions to take its share of the body weight. The mechanical features of the differential are of conventional form. There is the usual bevel gear and pinion and spurs. The front axle has an I-beam section which has a width of 1⅜ inch and a height of 2⅛ inches. There is a drop in the center as in accepted practice. The wheel spindles are of ample proportions, and there are stops provided which prevent the front wheels from coming into contact with the forward and aft steering connections.

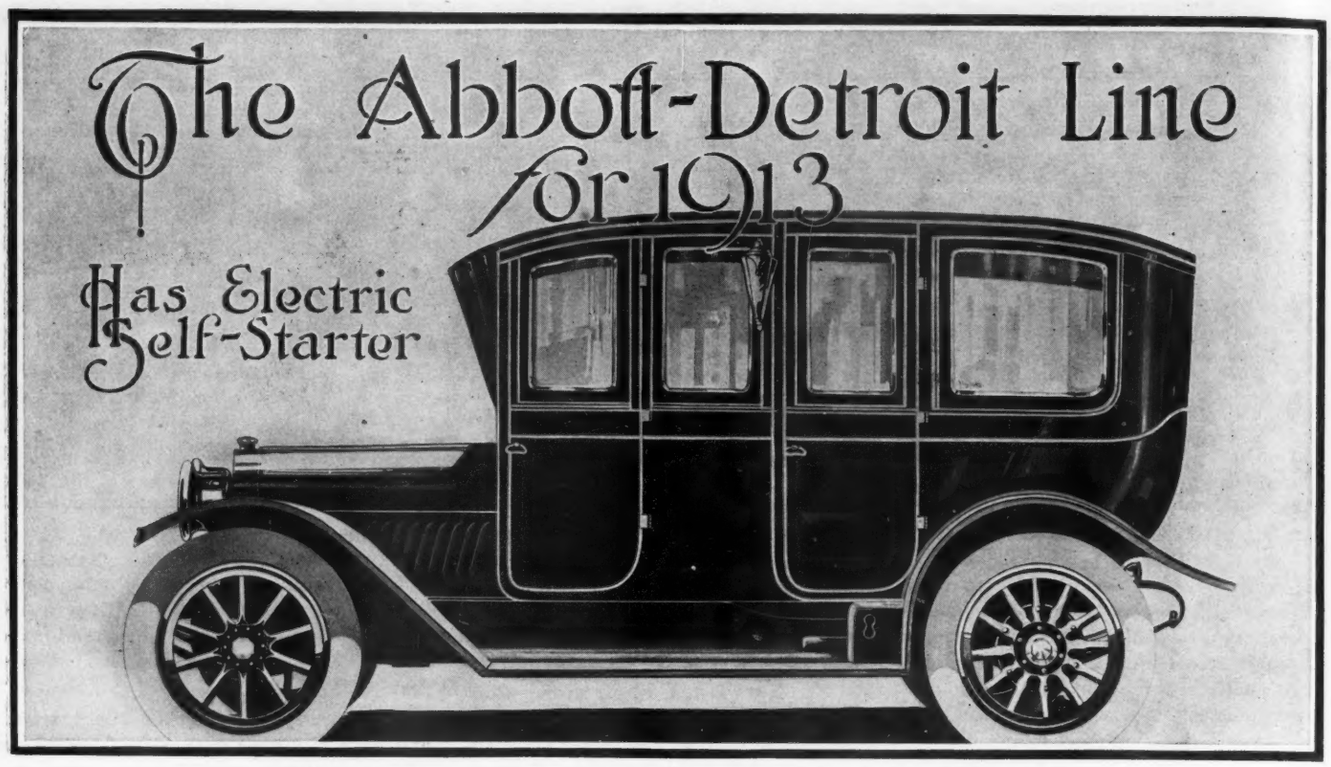
In keeping with its three-point suspension idea for the power plant the Herreshoff company has also incorporated this feature in the frame suspension. There are two spring supports for the frame in front and one in the rear. This is accomplished through the use of platform rear springs, that is, by the use of a half-elliptic cross spring which fastens to the frame at its center, and which is shackled to the side half-elliptic springs. These in turn, are fastened to the rear axle at their centers. Their forward ends fasten to the frame. The front springs are also semi-elliptic, and they have a width of 1¾ inch and a length of 34 inches, while the rear springs are 2 inches wide and 42 inches in length. They are of a special spring steel.

The channel-section frame is of pressed steel, which is hot rolled. It is bent up so as to clear the axle in the rear, but otherwise it is straight throughout. There are four crossmembers which materially aid in making the frame rigid, two of them being placed forward to support the unit power plant, a third being located a little more than half-way back and holding the brake equalizers, while the fourth is found at the rear.

The wheels are 34 inches in diameter, and have 12 spokes each. They are fitted with detachable, demountable rims as standard equipment, one extra being furnished. These take tires of the 34 by 4-inch size. The brake drums are bolted to the rear wheel spokes in the usual way, six bolts being used for each drum. The emergency brakes contract on the outside of the drums, which are 14 inches in diameter and have a width of 2 inches. The service brakes are internal expanding. The steering wheel has a diameter of 18 inches and the spark and throttle levers are mounted on a quadrant on top of it. The steering gear is of the worm-and-sector type, mounted on ball bearings.

Only one body type is furnished as standard equipment, this being a sheet-steel, five-passenger affair similar to the illustration. It is especially distinctive, due to its roominess and the straight-line appearance which is given it. The designers have seen to it that plenty of leg room is afforded to occupants of both front and rear seats. All door hinges and door handles are concealed, and this together with the absence of boxes on the running boards adds a clean appearance to the whole. The standard colors are blue for the body and black for the running gear, while the wheels are gray. The fittings are of nickel and black enamel.

The equipment, which is furnished, is composed of mohair top, side curtains, top cover, acetylene headlights and gas tank, combination oil and electric side and tail lights, 80 ampere-hour storage battery, tire tools, jack, tools, demountable rims with one extra, speedometer, pump, horn, tire carriers and straps, robe rail, foot rail and windshield. The total weight of the car, exclusive of passengers, is in the neighborhood of 2,200 pounds when fully equipped.



ABBOTT-DETROIT 44-50 CHASSIS WITH LIMOUSINE BODY FOR COMING SEASON

TWO models for 1913 are announced by the Abbott Motor Co. These are the 44-50, which is practically unchanged from last year, and the 34-40, which is a new model and really a small edition of the larger car. It is an entirely different design from the smaller Abbott model of previous seasons, and the aim has been to make it as nearly as possible a counterpart of the large car, which has been most successful in the past. The two Abbott features most in evidence in the new line besides the new motor of the 34-40 are the adoption of underslung spring construction on all models and the addition of an electric starting device.

Valve-in-Head Motor Replaced by L-Type Monoblock in 34-40

The announcement of the use of electric starting by the Abbott company is the third to be made by large Detroit concerns, and indicates a growing favoritism for this method of turning the crankshaft from the seat. The starter motor, however, for the Abbott system is entirely independent of the electric-lighting generator and the magneto. It is a system which has been designed solely for these cars. The motor as installed in the engine, is inclosed in a cylindrical case and on the left side forward. It is driven by current from a storage battery which is mounted under the car body near the rear of the frame. This battery has a capacity of 180 ampere-hours. It is charged by the lighting generator. When used for starting the car, the motor is connected with its battery by a switch on the steering wheel, contact through which is accomplished by retarding the spark lever to a certain point. This operation also brings the motor gear train into mesh with the crankshaft. The crankshaft gear of this train is mounted on an over-running clutch which permits the gear to run idle.

INTERIOR OF MULTIPLE DISK CLUTCH ON 1913 ABBOTT-DETROIT

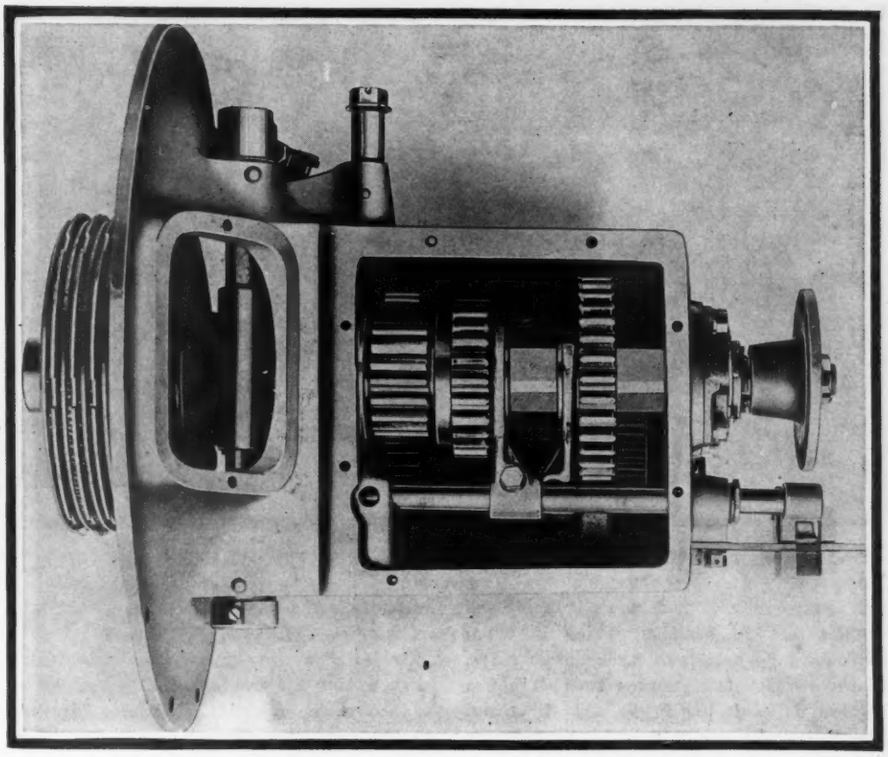
From its construction, it is seen that the starting system cannot operate until the spark lever is retarded sufficiently to make contact, and for this reason it is claimed that backfiring is almost eliminated. However, should the magneto be improperly set, or should the cylinders be full of carbon and preignition take place, a protecting device in the over-running clutch will take any resulting backfire, and will prevent such abnormal conditions from damaging the starter or its parts in any way. Therefore, all that must be done to start the motor is to fully retard the spark. After the engine is running under its own power and the spark lever is released, it automatically goes back to its normal running position on the quadrant. In making the starting, ignition and lighting electrical apparatus entirely independent and distinct from one another, the

Abbott company believes that it has eliminated the possibility of interference with other functions, should any one of the three electric units get out of order. That is, in case the starter motor or its connections become defective, the ignition is still unhurt, and vice versa.

Underslinging of the springs all around on all models has made no difference in the general appearance of the machines, as the springs are of the same form as heretofore, and no alterations have been made in the frames. The new manner of suspension does not lower the clearance, this being retained at 10¾ inches on all models. Springs are merely shackled underneath the axles instead of being mounted on top of them. The sizes are the same for all rear springs, which are three-quarters elliptic. They are 48 inches long, while the half-elliptic front springs on the larger car are 38 inches in length, and 1 inch shorter on the smaller model. All springs have a width of 2 inches, giving them ample strength.

Though only one Continental motor was used this season, that being placed in the 44-50 model, for next year both machines are equipped with motors of this make. Formerly, the Abbott company manufactured the motor for its small car, it being a valve-in-the-head type, but its construction has been discontinued in favor of the Continental monoblock construction.

Naturally, the motors of the new models present the same general characteristics of construction. They have L-head cylinders, inclosed valves, inclosed flywheels, and clutches and gearboxes as parts of the power plant units. The 44-50 motor has its cylinders cast in pairs, the dimensions being 4½ by 5½ inches bore and stroke, respectively. The power range is represented by the designation of the model, the block tests showing from 44 to 50 horsepower under load. Two cover plates admit of access to the inclosed valve stems and valve springs, one plate being used on each pair of cylinders. A single hand-screw serves to hold each plate in place. This inclosed valve feature is being added as a standard feature by manufacturers.



GEARSET AND CLUTCH OF ABBOTT 44-50

The monoblock motor which is used in the 34-40 has a bore of 4⅛ inches and a stroke of 5¼ inches, the horsepower developed being between the limits indicated in the model designation, as with the other motor. Valves are also inclosed by two cover plates. All valves are interchangeable, and they have nickel-steel heads and machine-steel stems, the two parts being electrically welded together. Valves of the 44-50 motor have a diameter of 2 inches, while those of the 34-40 are 1¾ inch in diameter. Valve stems have a diameter of ⅜ and $\frac{7}{16}$ inch, the latter size being for the 44-50 motor. The ends of the push rods, which are in contact with the tappets, are hardened to protect them against wear. Tappets are of the mushroom type and bear directly on the cams.

The crankshaft and camshaft bearing dimensions of the two motors are given below:

Crankshaft, 44-50 motor.

Front —1⅞ by 3 inches.
Center—1⅞ by 3 11/16 inches.
Rear —1⅞ by 4½ inches.

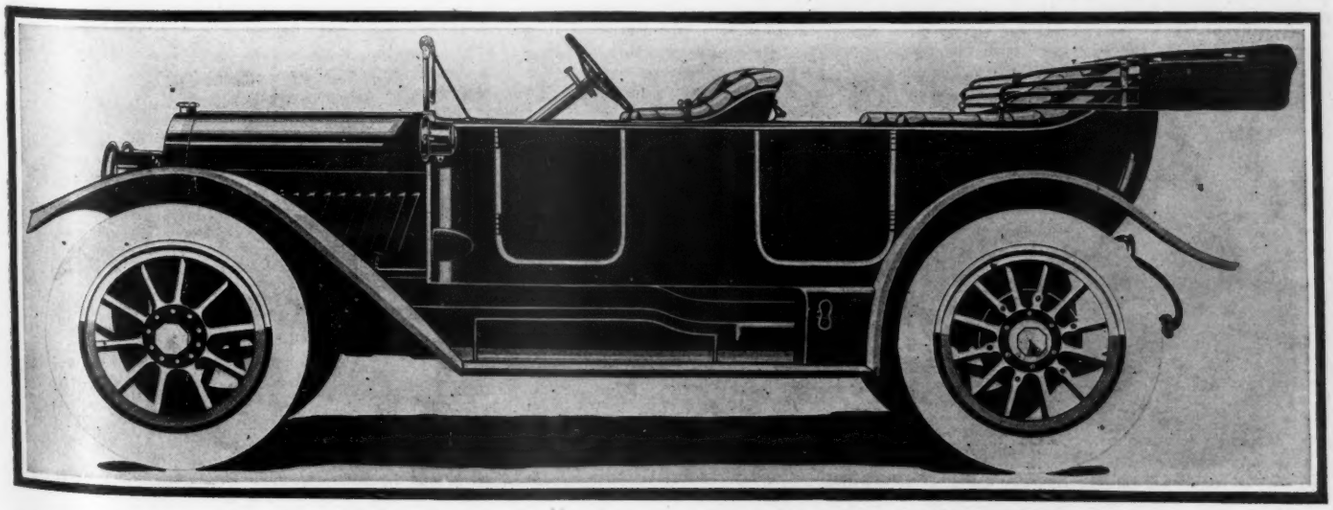
Crankshaft, 34-40 motor.

Front —1¾ by 2¾ inches.
Center—1¾ by 3 inches.
Rear —1¾ by 4¼ inches.

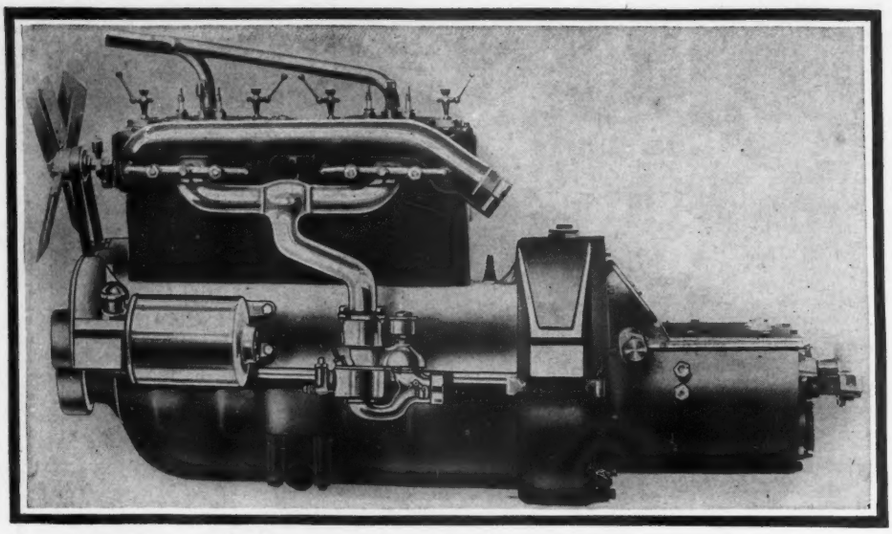
Camshaft, both motors.

Front —2¼ by 2½ inches.
Center—2¼ by 2¼ inches.
Rear —2¼ by 1¼ inches.

The first dimension given in each case is the diameter, while the second is the length. All bearings are of the plain type of Hoyt's nickel bronze. Both crankshafts and camshafts are of carbon steel, heat-treated, drop-forgings. The cams are integral with the shafts. Crankshafts have a tensile strength of 90,000 pounds



ABBOTT-DETROIT 34-40 TOURING CAR SHOWING NEW STYLE OF HOOD



POWER PLANT OF ABBOTT 44-50 SHOWING ELECTRIC STARTING MOTOR

per square inch. Air-furnace iron is used in the pistons, each of which is fitted with four diagonally-split, eccentric rings. There are five oil grooves turned in the outside of each piston to aid in oiling. Piston lengths are 5 and 5½ inches for the 34-40 and 44-50 motors, respectively. The piston bearings are in the bosses, the wrist pins being pinched into the small ends of the connecting rods and moving with them. This gives a total wristpin bearing length of 2⅞ inches in both motors, the piston-pin diameter for the larger type being 1¼ inch, and for the smaller, 1 inch. The connecting rods are of the usual I-beam construction, the material being heat-treated, drop-forged carbon steel. These rods have lengths of 10½ and 11 inches for the two motors. At the crankshaft ends, the bearing sizes for the 44-50 motor are 1⅞ inches diameter and 3 inches length; for the 34-40 motor, 1¾ inches diameter and 2½ inches length. The connecting-rod caps are kept in place by four bolts each, these bolts being locked on by special devices. The bearings are adjusted by sheet steel shims of varying thickness.

In both motors the flywheel is the same size, having a diameter of 17½ inches and a face width of 5 inches. It is fastened to the crankshaft flanges by six bolts of large proportions. Flywheels are completely housed in aluminum alloy cases. This material also is used for the crankcases, which are of two-piece construction, the upper halves carrying the bearings. On the upper portions of the crankcases, four supporting arms for fastening the power plants to the frames are cast.

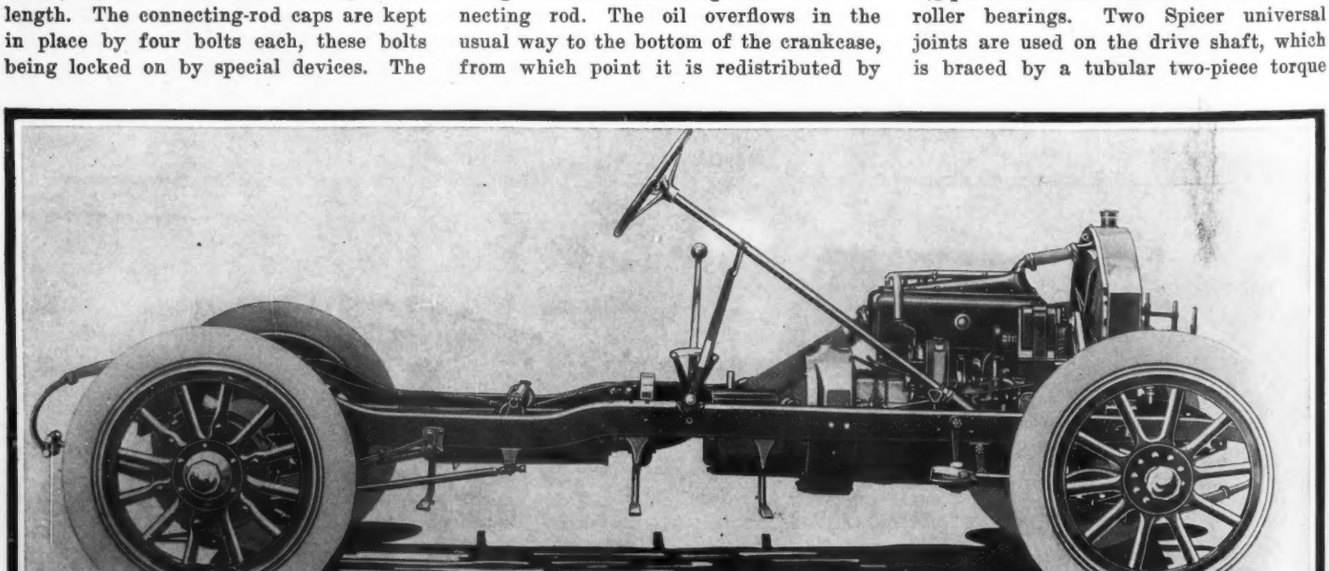
Constant-level splash lubrication is employed, the oil being circulated by a cam-operated, double-plunger pump. This pump forces one oil stream to the front timing gears, the other to the rear main bearing. All other bearings are lubricated by the oil splashed by the dipping of the connecting-rod ends into the oil troughs, there being an individual trough for each connecting rod. The oil overflows in the usual way to the bottom of the crankcase, from which point it is redistributed by the pump. A combined breather and filler serves to relieve crankcase compression as well as affording an opening for the addition of oil.

Water circulation is positive by gear-driven centrifugal pump, mounted on the pump shaft. This pump is of bronze. Fans are of pressed steel construction, that of the larger motor having a diameter of 18 inches and the smaller 16 inches. The water outlet manifold of the large motor is provided with two connections, one at the top of either pair of cylinders, while only one wide outlet is used with the monoblock motor. Water inlets from the pumps of the two motor types have the same number of connections as the outlets.

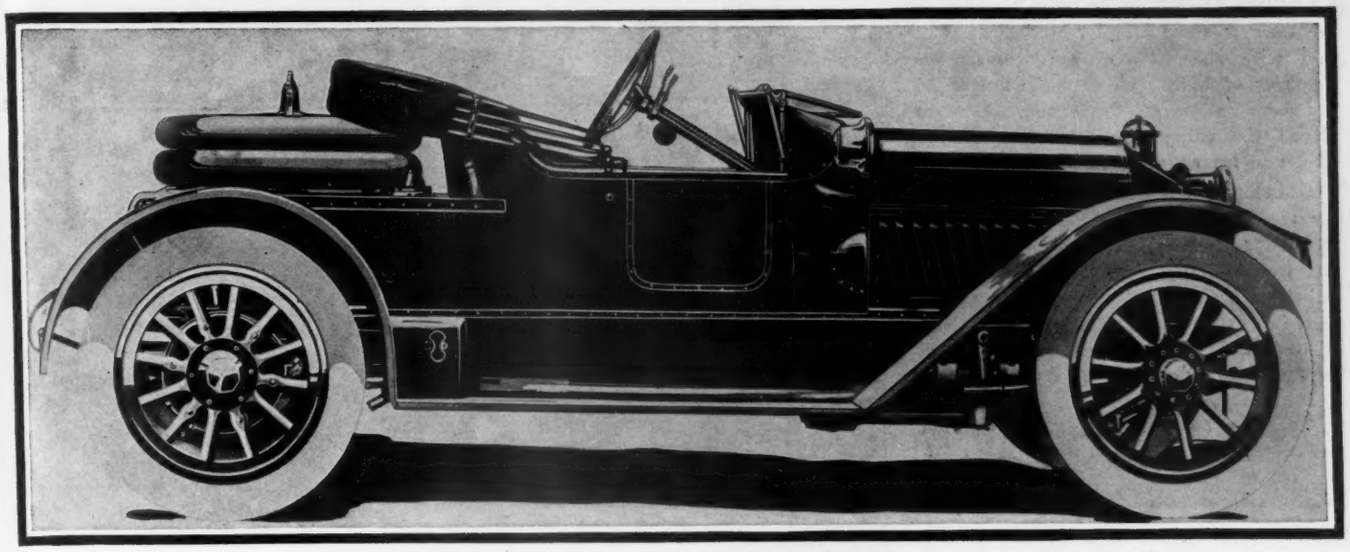
In addition to the electric starter, the electrical equipment consists of Splitdorf magneto dual system and an Autolite lighting generator. The latter is driven by silent chain from the pump shaft, while the magneto is directly connected to this shaft.

Gravity fuel feed is used, tanks being placed under the front seats of all models except roadsters. The carbureters are of Mayer make, the size for the large motor being 1½ inches and 1¼ inches for the 34-40. Carbureter adjustment and primer are mounted on the dash, the latter for use in cold weather. The gasoline tanks are fitted with self-measuring gauges so that the quantity of fuel may be easily determined at any time. Each car also carries a reserve supply of gasoline.

The clutch and gearset are standard for both models, the former having fourteen plates, every other one of which is faced with Raybestos. These clutches are of the dry-plate variety, the transmission gears give three forward speeds and reverse and gearshift levers are placed at the right side of the frame. Chrome-nickel steel gears are used, their shafts are of 3½ per cent nickel steel and run on Timken roller bearings. Two Spicer universal joints are used on the drive shaft, which is braced by a tubular two-piece torque



CHASSIS OF 34-40 MODEL WITH SPRINGS UNDER AXLES



ABBOTT-DETROIT 44-50 BATTLESHIP ROADSTER

arm running from a center cross member back to the rear axle housing and parallel to the drive shaft. Side radius rods maintain proper rear axle alignment. The axles themselves are of the floating type and present an exceedingly sturdy appearance.

Axle shafts and gears are of nickel-steel and are provided with Timken roller bearings. The radial and thrust loads of the rear wheels are carried by Shafer annular bearings. These axles are of Warner make and are of one-piece construction, no outer webs being used. Brace rods run from the axles underneath the differential housings. Access to the differential gears is had through the usual type of rear opening, which is provided with a bolted cover plate. The front axles are of the generally used I-beam type, having drop centers, the drop being 4 inches. Front wheel spindles are provided with Timken roller bearings.

Internal expanding and external contracting brakes, the drums of which are bolted to the rear spokes, are used, the diameter being 16 inches for the large car and 14 inches for the smaller. Brakes are fitted with equalizers and all working parts are provided with grease cups. The frames of the two models are counterparts, each having a drop a little back of the center and a kick-up at the rear to clear the axle. They are of channel section having a width of 4 inches and a depth varying from 1½ to 3¼ inches. Cross members effectually brace the frame.

Thirty-six-inch wheels, having 1¾-inch spokes are used on the 44-50 model, while 34-inch wheels are used on the other model. Rear wheels have twelve spokes and front ten spokes. Demountable rims and Goodrich tires are furnished on all cars, the tire sizes being 34 by 4 inches on the 34-40 models and 36 by 4½ inches on the 44-50 machine. With the idea of preventing decay and looseness, due to the elements, all spokes are given a special oil treatment. Wheelbases are 121 and 116 inches, the former for the larger model.

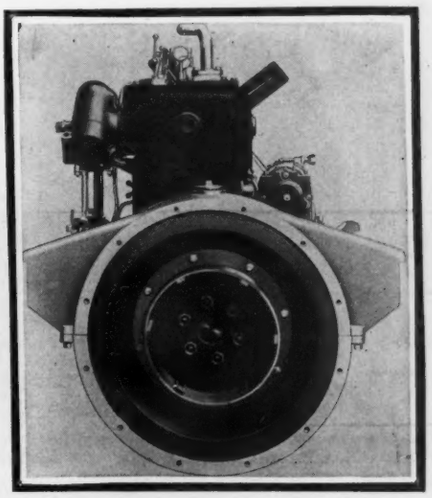
As to the bodies, the 1913 Abbotts may be had with any one of six attractive body styles, which include limousines, coupes, touring cars and roadsters. However, only a five-passenger touring car or a three-passenger fore-door roadster may be secured on the smaller chassis. Black enameled and nickel fittings are used throughout the entire line of bodies. Upholstering on all bodies is of hand-buffed leather and hair, and has a depth of 12 inches.

The dashes are particularly attractive, as they are being leather covered to match the body colors. The dash equipment of speedometers, clock and switches is arranged so as to be easily accessable from the driver's seat, and at the same time to present a clean appearance. Much attention this year has been paid to the external appearance of the bodies, which are of steel construction. Ventilators are placed at either side and the doors are made large for easy access to the seats.

The so-called battleship roadster, which was shown for the first time at the New York show in the Grand Central palace, is to be continued on the 44-50 chassis. The radiator of this special model is V-shaped and the body construction is of substantial sheet steel with exposed rivets. This car has made a hit in the past and the Abbott company has decided to furnish it this year on special order.

Rural District of Great Lakes

THOSE motorists who delight to leave the beaten path and tour the less frequented roads that lead from village to hamlet, rather than from city to metropolis, will find many hours of pure delight and much elucidating suggestion in following the rambles of Clifton Johnson, in "Highways and Byways of the Great Lakes," which is the sixth of a series dealing with the picturesque charms of rural American life. The practical tourist will find appended to each chapter, helpful notes which will aid him in deciding which of the regions described may be toured with the most comfort and facility. There is little to choose between the rustic charm of the rural sections of the localities described, each of which, while preserving an individuality of its own, in common with the others is homely, familiar, and altogether delightful. The country and the manners of its populace are described largely in the words of the people themselves, in their own fascinating phrasing, and the book is generously illustrated with intimate scenes from their daily occupations, many of which are reproductions from Mr. Johnson's own photographs. The country is described as it will be found by the tourist, in a manner as simple and unconventional as itself and its people. The book is bound in olive cloth and printed on rough-cut paper, well befitting the rustic simplicity of its diction. The MacMillan Co. is the publisher, and the book sells for $2. net.



REAR-END VIEW OF MOTOR

From the

ENCOURAGING Motoring—In order to make assessment of motor cars easier and with the view of encouraging the purchase of high class cars the municipal tax commission of Covington, La., has placed the value of all touring cars at $250 and all runabouts at $200.

Addition to Waubonsie Trail—The route for the Waubonsie trail through Vermillion county, Illinois, was decided upon last week following a conference between the Danville Industrial Association and various car owners. The trail, starting at Urbana in Champaign county, will extend east through Fairmount and Homer and thence across the Indiana state line to Fountain county, Indiana, from which points the route will go straight to Indianapolis.

Minnesota Bills Races—Barney Oldfield, Bill Endicott and Louis Disbrow are three of the drivers booked up for the annual motor car race meet on the last day of the Minnesota state fair at Hamline September 7. An open 5-mile race for 600-cubic inch displacement cars will be on the program, with $1,000 for the winner of the best two out of three. A free-for-all and a race against time will be listed; also a race for all classes. A competition will be arranged also for trucks. The race will be in charge of Eli S. Warner, one of the state fair board directors. He has hung up $500 for local drivers in class races.

First Car at Dark Harbor, Me.—The residents of Dark Harbor at Islesboro, Me., are considerably stirred up over the appearance of the first motor car within the confines of that place. There has been no legal bar to motor vehicles, but the summer residents who add much to the revenue of the little town have expressed a wish that the roads be kept clear for riding and driving with horses and this has been respected. Captain Fields C. Pendleton, for many years a resident, arrived a few days ago from Brooklyn, N. Y., driving a motor car which he has been using ever since on the upper section. Now some of the other summer residents intend to bring along their cars and use them as long as the rule has been broken.

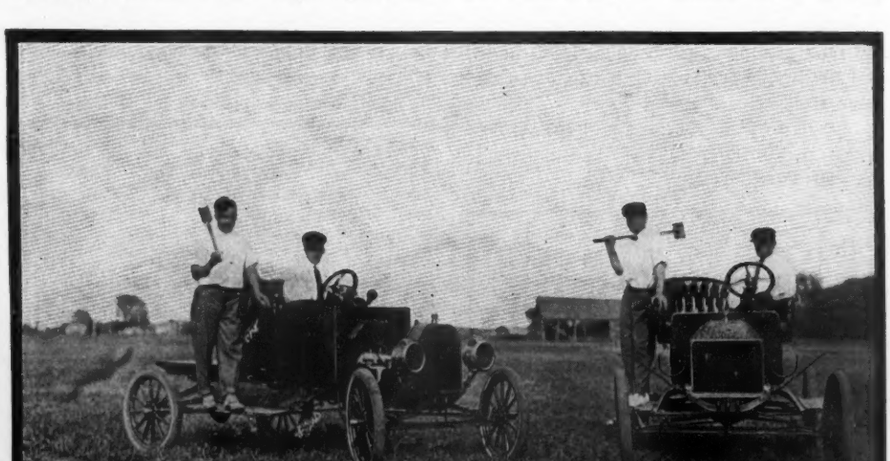
SYRACUSE SOCIABILITY RUN AT TRENTON FALLS, N. Y.

Lawrence Traffic Laws Questioned—The Lawrence, Mass., city council recently adopted some regulations to govern traffic in the business section of the city designed primarily to prevent speeding of motor cars and now the police have started to enforce the rules. The police were told, however, by a couple of attorneys that the regulations were invalid due to the fact that they were not published in the newspapers at least 1 week prior to their adoption, as the city charter provides. City Clerk Wade and city solicitor says they are valid, but until the controversy is settled some of the police officials, fearing suits for false arrests, are not seeking to enforce the regulations.

Sandy Stretch Eliminated—Last week saw the completion of the Ross Fork sand road between Pocatello and Blackfoot, Idaho. This stretch of road was nearly 6 miles long and was on the main traveled highway between Salt Lake City and Yellowstone park. It was claimed to be the worst stretch of sand in America. The state spent $40,000 on this road in the past year, macadamizing it from one end to the other.

New Michigan Road—Prominent men of Kalamazoo and Battle Creek, Mich., are planning to build a macadamized road to connect the two cities, the road to pass through Augusta, Galesburg and Comstock. The road will be 23 miles in length. It is planned to level all grades as far as possible. It is hoped to raise the cost of the road by popular subscription among residents of the two cities and farmers along the route.

Michigan's Report—Reports of the Michigan state highway commissioner just issued show that for the first time in history all money appropriated by the legislature was used by the department, indicating an increase of interest in better highways. Only $235,000 has been appropriated for the next 12 months and this, according to Commissioner Ely, will not be sufficient to meet the growing demands for improved roads. The report covers the fiscal year ending June 30. During the year 382.5 miles of road were built at a cost of $249,671. During the last 7 years of the history of the state highway department 1,232 miles of state reward highways have been built, upon which $835,000 has been paid by the state in rewards. This approximates



READY FOR MOTOR POLO AT WICHITA, KAS.

Four Winds

REXFORD FALLS, VISITED BY SYRACUSE MOTORISTS

one-quarter of the cost of the roads, the remainder having been paid by townships and counties.

Atlanta Law Too Vague—The Georgia court of appeals has handed down a decision that Atlanta's motor ordinance, forbidding careless and reckless driving is too vague to be enforced. This was in the case of a negro chauffeur charged with killing Miss Aldine Edwards November 8, 1911. The court added, however, that the state law requiring cars to slow down to 6 miles an hour at crossings could be enforced.

Trying Five Kinds of Paving—The county commissioners of Allen county, Ohio, have decided on an experiment on road building which is expected to produce good results. Upon the new Shawnee road, leading out of Lima, five methods of paving will be tried with a view to ascertaining the best method of paving for country roads. The expense of the experiment is to be borne partly by the county and partly by authorities of Shawnee township.

Syrup Would Not Work—N. R. Young, of New York, who has been touring through the White mountains this summer, picked up a can supposedly filled with oil at a garage at Intervale, N. H., a few days ago, poured it into the oil tank and then started on a trip to Jackson. When he got out in the woods the car balked and he could not make it go. Neither could any one of a dozen other motorists who stopped to give advice. Finally the car was towed back to Intervale and a repair man got busy with it. While poking over the mechanism he detected a sweet smell and tasted the supposed oil. It was sweet and sticky. Digging further into the car, he found it pretty well stuck together with a lot of syrup that some joker had put into the oil can.

Minneapolis Counts the Cost—Care of city motor cars in Minneapolis for the first 6 months of the year has been figured at $2,128.89, regarded as saving of 50 per cent on figures for same service at a private garage. The figures are: Storage, $306; labor, $399.48; material, $1,186.39; general repair expense, $237.02.

Expensive Joy Riding—Because John R. McHally, a chauffeur for a prominent summer resident of Magnolia, Mass., insisted on blowing his horn repeatedly late at night when there was no need of it, awakening many people and refusing to heed the warnings of the police, he was summoned into court at Gloucester and fined $15. Then when he went back to take his car out he found another chauffeur driving it and he was told that he had been discharged.

New Club in Michigan—The Battle Creek Automobile Club has been organized at Battle Creek, Mich., with the following officers: President, G. H. Bathrick; vice-president, I. Fell; secretary-treasurer, H. W. Johnson. The club's objects are to obtain fair laws, seeing they are enforced, and encouraging good roads.

Goodrich Marking More Roads—The B. F. Goodrich Co., which has undertaken to mark the principal motor routes of the country, has added to its fleet two more road-marking trucks fully equipped for the work, one of which is at present engaged on the roads in New England, while the other is covering Ohio, Indiana and parts of Pennsylvania and Kentucky.

Fixing Lincoln Way—The Lincoln way in Kentucky that was so badly damaged by the recent cloudburst is being put in repair gradually and is now regarded as safe for vehicles. The road from West Point to Dripping Springs was completed at a cost of $3,000 and experts say that to put it in the same condition as before the disastrous storm will cost $5,000 more.

Motor Polo the Latest—J. J. Jones, manager of the Jones Auto Exchange, of Wichita, Kans., agent for the Ford, is the inventor of motor polo, the first game of which was played at Wichita July 18. The greatest danger in the new game is the liability to collisions, and this cannot be avoided except at the start of the game, providing the motor cars get started together at close range. At the opening of the game the ball is placed in the center of the field and then forward cars dash for it, each being kept close enough to it to allow the mallet wielder to reach it, and at the same time far enough in the clear to prevent hitting the other car. Two cars remain behind to act as goal keepers.

MOTOR POLO CONTEST AT WICHITA, KAS.

Current Motor Car Patents

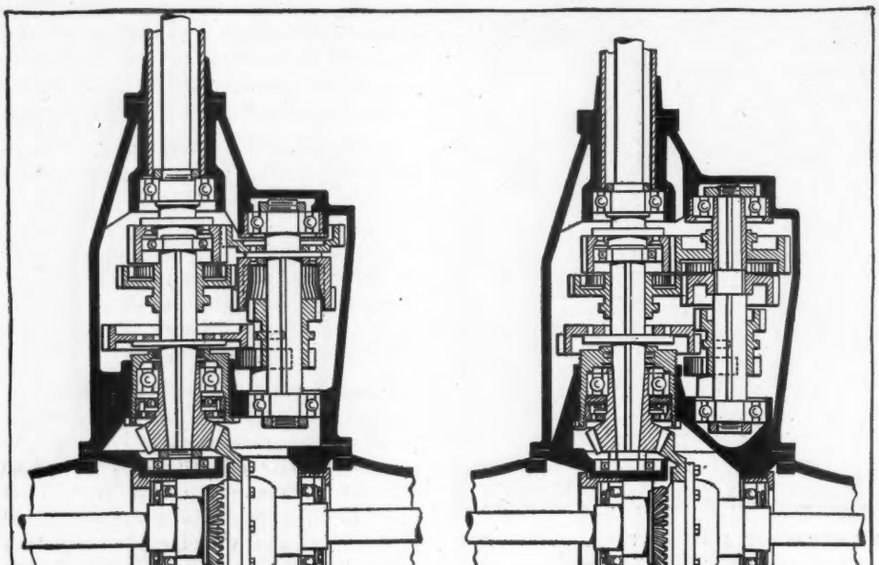


FIG. 1—HUFF'S PACKARD REAR SYSTEM

PATENTS ISSUED JULY 23, 1912

1,033,082—Speed Changing and Transmission Gearing. Dennis P. Collins, Pittsburgh, Pa. Filed December 29, 1910. Serial No. 599,966.

1,033,083—Speed Changing and Transmission Gearing. Dennis P. Collins, Pittsburgh, Pa. Filed April 1, 1911. Serial No. 618,478.

1,033,084—Speed Changing and Transmission Gearing. Dennis P. Collins, Pittsburgh, Pa., assignor to Collins Axle Mfg. Co., Pittsburgh, Pa. Filed May 31, 1911. Serial No. 630,495.

1,033,102—Transmission Gearing for Motor Vehicles. Russell Huff, Detroit, Mich., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed May 6, 1909. Serial No. 494,456.

1,033,130—Carbureter. Oliver P. Underwood and Raymond S. Hill, Des Moines, Iowa; said Underwood assignor to Herman C. Mills, Des Moines, Iowa. Filed August 29, 1910. Serial No. 579,489.

1,033,160—Explosive Engine. George F. Dillon, Kansas City, Mo. Filed July 8, 1911. Serial No. 637,469.

1,033,176—Transmission Gearing for Motor Vehicles. Russell Huff, Detroit, Mich., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Original application filed May 6, 1909. Serial No. 494,456. Divided and this application filed December 31, 1910. Serial No. 600,349.

1,033,185—Vehicle Wheel. James Warner McCallum, Plymouth, Ind. Filed April 24, 1909. Serial No. 491,894.

1,033,208—Rear Signal for Motor Cars. Amos B. Stites, Plainfield, N. J. Filed February 26, 1912. Serial No. 679,824.

1,033,211—Vehicle Wrench. John T. Sullivan, St. Louis, Mo. Filed October 2, 1911. Serial No. 652,244.

1,033,228—Dry Battery Cell. John W. Brown, Cleveland, Ohio, assignor to National Carbon Co., Cleveland, Ohio, a corporation of New Jersey. Filed September 14, 1906. Serial No. 334,603.

1,033,229—Tire for Vehicles. James P. Clare, Stratham, N. H. Filed February 17, 1911. Serial No. 609,139.

1,033,230—Process of Making Tires for Vehicles. James P. Clare, Stratham, N. H. Filed June 15, 1911. Serial No. 633,362.

1,033,253—Lantern for Vehicles. John George Aulsebrook Kitchen, Lancaster, and Isaac Henry Storey, Ambleside, England. Filed October 2, 1911. Serial No. 652,225.

1,033,292—Road Map. Victor Vallet, Paris, France. Filed June 22, 1911. Serial No. 634,818.

1,038,299—Spring Wheel. George J. Blazek and Charles Blazek, Red Lake, S. D. Filed March 15, 1911. Serial No. 614,610.

1,033,305—Signal for Motor Cars. Arthur B. Demuth, San Diego, Cal., assignor of one-half to George W. Stevens, San Diego, Cal. Filed June 26, 1911. Serial No. 635,303.

1,033,349—Elastic Suspension Means for Vehicle Bodies. Duncan Robinson, Boston, Mass. Filed July 26, 1909. Serial No. 509,533.

1,033,362—Locking Grease Cup or Lubricator. Thomas A. Walker, Evansville, Ind. Filed May 5, 1911. Serial No. 625,156.

1,033,417—Resilient Wheel. William H. Kern, Jersey City, N. J. Filed October 24, 1911. Serial No. 656,517.

1,033,425—Motor Car Fender and Co-operating Device. William A. Linquist, Minneapolis, Minn. Filed February 16, 1911. Serial No. 608,997.

PACKARD Gearset—No. 1,033,102. Russell Huff, Detroit, Mich., assignor to the Packard Motor Car Co., Detroit, Mich., Filed May 6, 1909, dated July 23, 1912. This transmission, like the regulation Packard type, is a unit with the rear axle housing or bridge. It is distinguished from the standard in the manner of engagement, the position of the shifter rings and the form of the gears. The high speed is of the usual direct-drive type, the countershaft gears running idle when it is in mesh. The type of clutch is unique, consisting of internal teeth on a sliding gear, which meshes with the extended teeth of the master gear on the drive shaft. This internally toothed gear is also provided with external teeth, and a shifter ring, engaging at its opposite position with the second-speed gear on the countershaft. This gear is in turn internally toothed, the teeth opening at a bevel to facilitate engagement. Engaging with these teeth is a sliding gear on the countershaft which engages respectively these inner teeth and the teeth of a large gear mounted on the driven shaft. It is shown in Fig. 1 at the left.

No. 1,033,176 covers the same device with a slight modification. The original application was filed May 6, 1909, divided and this application filed December 31, 1910, dated July 23, 1912. Similar to the foregoing, this gearset assembly consists of the usual Packard system as above, differing in the manner of operation, arrangement and design of the gear members. As illustrated in Fig. 1 at the right, the countershaft is driven by a pinion on the driveshaft, which engages with the third speed gear to obtain direct drive for the high speed. This third-speed gear is slid to its opposite extremity to mesh with the second-speed idler, which runs loosely on its shaft, being connected to the driven countershaft gear by internal teeth on the latter, which engage with its external teeth. Low speed and reverse are obtained by an additional idler gear, which in reverse telescopes within the second-speed idler.

Carbureter—No. 1,033,443—Charles A. Morris and Walter H. Merritt, Red Bank, N. J. Filed March 27, 1911, dated July 23, 1912. Unique in the use of the long-dis-

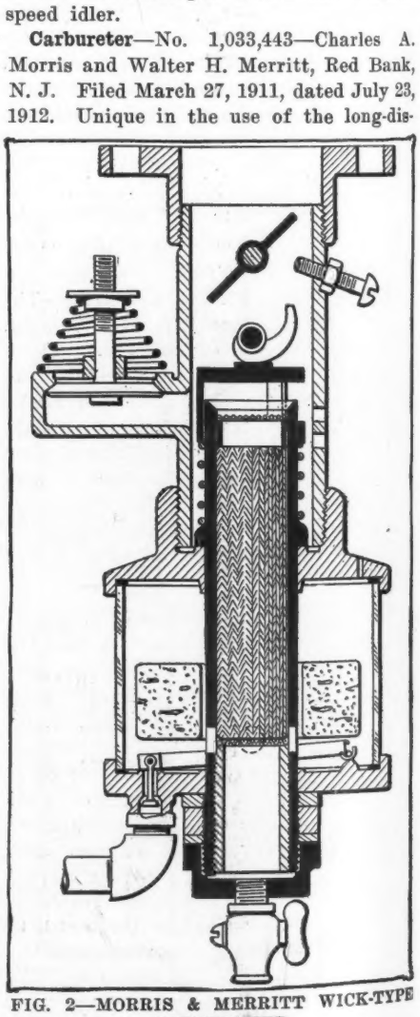


FIG. 2—MORRIS & MERRITT WICK-TYPE CARBURETER

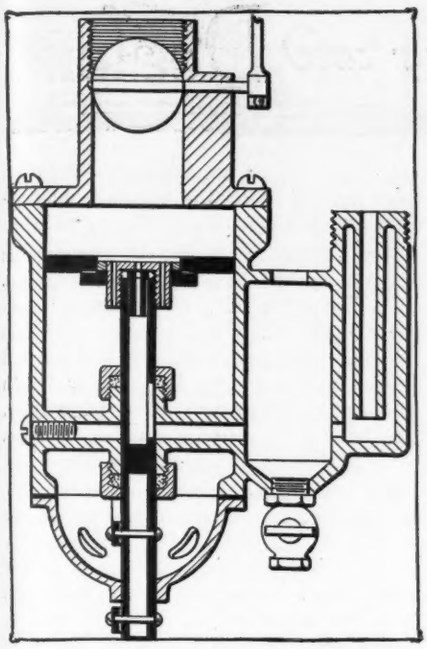


FIG. 3—HILL'S PISTON CARBURETER

carded wick vaporizer, this carbureter, Fig. 2, consists of a glass float chamber, with a cork float, and needle valve, a mixing chamber and air intake, provided with an auxiliary air valve of the usual type, with a conical spiral spring, and a vertical wick tube. This tube is open at its top, and provided with a drain cock at its bottom. The wick is disposed within this tube, and extends up into the mixing chamber, and down below the gasoline level in the float chamber. It is tubular in form, and provided with an interior tube, which exposes it at the top and bottom. Adapted to regulate the amount of air passing over the top of the wick, a valve, normally off its seat on the wick tube, is placed in the mixing chamber and is adjustable for enriching or thinning the mixture. The main air inlet is below the wick opening, about the wick tube, and the outlet is provided with the usual butterfly throttle, with a stop screw, placed obliquely in the body of the throat.

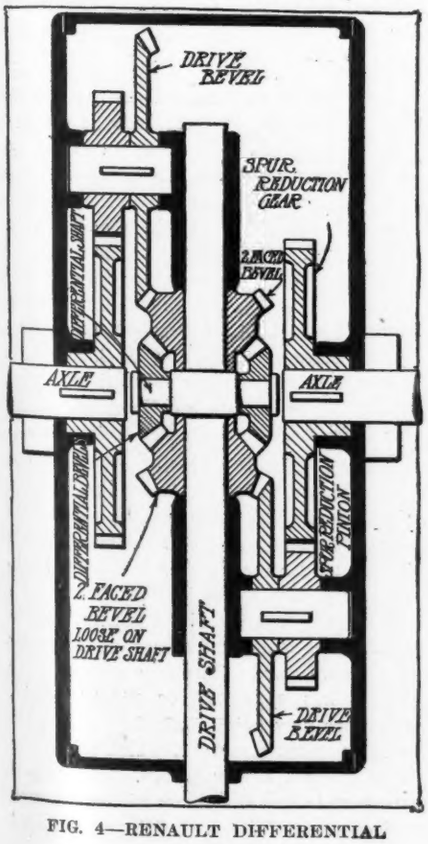


FIG. 4—RENAULT DIFFERENTIAL

Spark Plug—No. 1,033,449—James E. Murray, Brooklyn, N. Y., assignor to Arthur B. Mossler, New York, N. Y. Filed Feb. 23, 1907, dated July 23, 1912. This spark plug, Fig. 5, is of the double-circuit type, having two distinct sparking points in one body, and connected to two separate binding posts.

Transmission Gear—No. 1,033,618—Louis Renault, Billiancourt, France. Filed July 20, 1910, dated July 23, 1912. Embodying radical departures from the usual practice in such devices, the reducing differential gear, shown in Fig. 4, reverses the usual order of drive in its bevel-gear differential, and utilizes spur gears and pinions for its reducing mechanism. The drive consists of a propeller-shaft entering the housing of the device, and by means of the gearing, to differentially drive the divided halves of a live rear axle or jackshaft. Unlike most devices of this nature, the driveshaft is carried directly through the interval between the inner ends of the axle shafts, having a bearing at either side of this interval. Directly within this space are four small bevel pinions with shafts at right angles to each other and to the driveshaft, the inner ends of which are integral with an annular collar about the driveshaft, to which the latter is keyed.

These bevel pinions mesh with two double-faced bevel gears, which are rotatably mounted on the driveshaft, and which mesh, on their opposite faces with respective bevel gears, which are in turn, secured integrally to gear-pinions mounted on short shafts, transverse to the driveshaft, situated on either side of the driveshaft, and on opposite sides of the axleshafts. These small pinions mesh, in turn, with larger gears mounted on the squared ends of the axleshafts.

In normal running, the first mentioned bevel pinions act as clutches on the inner surfaces of the two-faced bevels, not turning on their axes, the reduction gears are therefore driven at equal speeds. In rounding a corner, the unequal resistance of the wheels causes the small bevel driving pinions to revolve, causing a differentiation between the speeds of the respective reducing gears, causing the wheels to revolve at unequal speeds, to allow for the difference in the arcs they describe in turning. The advantages of this arrangement are: That the differential portion of the device is run at driveshaft speed, and is subjected to only driveshaft torque, which owing to the reduction is only equal to that portion of the torque exerted on differentials turning at axle speed, as is the quotient of the axle speed to the driveshaft speed, to the axle torque; which in the case of a 3 to 1 gear is one-third. The reduction gears are straight-faced spur-gears, and hence adapted to stand greater strains than the usual bevels, and owing to their position, are more readily accessible than in standard design.

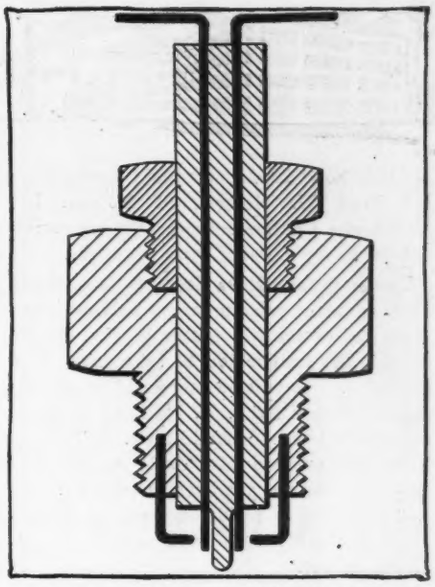


FIG. 5—MOSSLER DOUBLE PLUG

Carbureter—No. 1,033,130—Oliver P. Underwood and Raymond S. Hill, Des Moines, Ia.; said Underwood assignor to Herman C. Mills, Des Moines, Ia. Filed Aug. 29, 1910, dated July 23, 1912. Of the piston type, the carbureter shown in Fig. 3 is of the float-feed type, with a single non-adjustable nozzle. This nozzle is at the upper end of a vertical telescopic fuel tube, which communicates with a horizontal supply pipe leading from the float chamber, by means of a slot. Above the nozzle in the mixing chamber, is a floating disk, which is of the same size as the air chamber, and provided with a large central opening, for the passage of air, which is the same size as the throttle throat. This disk is free to rise or fall as drawn by the suction of the engine. Air is taken into the mixing chamber from below, and introduced into it through an annular air passage about the nozzle tube. Below the large piston disk, is a smaller disk, sliding upon the vertical nozzle tube, of sufficient diameter to close the central opening of the upper disk, when they are brought together, but allowing a passage of air about it, when apart. Connected to the central tube is a pivoted lever which is adapted to move it vertically. To this lever are connected links to each of the disks, adapted to separate or bring them together, according to the power of the engine suction. The object is to allow a greater or less volume of air to be admitted according to the suction of the engine, simultaneously varying the height of the spray nozzle to the volume of the mixing chamber.

Among the Makers and Dealers

NICHOLS Made Owens' Assistant—Fred W. Nichols, of Boston, has joined the Chalmers Motor Co. as assistant to Percy Owens, sales manager.

Paris Quits Olds Service—Rupert E. Paris, general sales manager and assistant treasurer of the Old Motor Works, has resigned, the resignation to take effect September 1. He will be succeeded as general sales manager by J. V. Hall, of Chicago, manager of the Oldsmobile Co. of Illinois. Who will succeed Mr. Paris as assistant treasurer has not yet been announced. He will continue to reside in Lansing but his plans for the future have not been completed as yet.

Seagrave Plant Busy—A record-breaking business is being done by the Seagrave Co., Columbus, O., manufacturer of motor-driven fire apparatus, according to a report issued this week by this concern. A tabulation taken in the factory on July 25 shows that there are on hand unfilled orders for forty-eight pieces of motor-propelled apparatus, and during the past few months repeat orders have been received from at least fifteen cities. Since 1907, when this firm started construction of motor-propelled fire wagons, the output has increased 150 per cent, the firm now employing 340 skilled workmen, while then only 150 were engaged in the factory.

Carbureter Company Growing—Increasing its capitalization from $25,000 to $100,000, revising its official roster and preparing to enter its new factory at Long Island City, the G. and A. Carbureter Co. is about ready to cut a bigger figure in the accessory industry of the motor car business. The increase in capital has just been announced, although it was effective July 1. C. Stanley Mitchell has been elected vice-president of the corporation. Several mechanical innovations and a new type of auxiliary carbureter are under consideration by the company and announcements will be made during the coming fall.

Too Many for a Picnic—Since the consolidation of the Diamond and Goodrich companies of Akron, Ohio, the annual outing and picnic which had been given to the employes of the two companies separately has been discontinued because of the too large number of employes and their families. Instead a vacation will be given to all employes of the company August 1, and each will be given $1 in order that he may go where he pleases and enjoy himself at the expense of the company. According to E. C. Tibbets, of the company, it is impossible to secure transportation for the 13,000 employes and their families to any summer resort. It is figured that it will cost the Goodrich company $15,000 to give the day's outing in addition to the loss of work at the factory. The Goodrich Co. has been giving outings for 31 years.

NEW COOK & STODDARD STORE AT WASHINGTON, D. C.

Cordner Makes a Change—E. Q. Cordner, who has been sales manager for the American-Marion Sales Co., since the organization of that concern, has resigned to accept a position of manager of agencies for the R. & L. Co., general eastern agent for the Garford product.

Overland Stock Increased—The increase in capital stock of the Willys-Overland Co. from $6,000,000 to $15,000,000, forecasted some time ago, was formally approved by the secretary of state at Columbus last Thursday. As a result in the increase in the organization's financial forces extensive improvements will be made and these are already under way. The addition to the Toledo factory will be made at an expense of several hundred thousand dollars.

Fritchle Invading East—Bart Roeder, president of the eastern agency of the Fritchle Electric Vehicle Co., of Denver, Colo., who has been making a tour of southern New England, seeking a location for a factory to build Fritchle vehicles, has determined to locate at Bridgeport, Conn. President Roeder states that the Fritchle company's plant at Denver is working day and night and that it cannot fill the orders that come in from the east; therefore it was imperative that a factory be located in New England. He says that the present plans call for the use of a temporary factory and the employment of 100 skilled workmen pending the securing or the erection of a large factory with the ultimate employment of from 2,500 to 3,000 mechanics.

New Franklin Model—Announcement is made by the Franklin Automobile Co. of the addition of a two-passenger runabout built on the Franklin little six chassis. This new runabout will have a folding auxiliary seat in the rear which will accommodate two more passengers. The body style will be English in type, with cowl dash and high side doors.

New Canadian Enterprise—The contract for the buildings for the new motor car factory in St. John, N. B., will probably be let in a few days. The site is on the Marsh road. There will be two buildings of brick and concrete, each 227 feet in length, one of which will be 60 feet wide and the other 75. They will be one-story structures. The greater portion of the stock is held in St. John.

Will Make Brass Tubing—The Bay City Copper and Brass Mfg. Co. has been incorporated with a capitalization of $50,000, of which $26,500 has been paid in. The company has purchased the patent on a machine which pulls brass tubing from both ends, doubling the capacity of any machine heretofore manufactured. The officers of the company are: President, Thomas S. Oliver; vice-president, Thomas W. Clements; general manager, Frantz Oliver; general superintendent, Charles J. Perry; secretary, Daniel J. Lister; treasurer, P. J. Flower.

Cole Agents Entertained—Several agents for the Cole were entertained at the factory of the Cole Motor Car Co. in Indianapolis, during the week of July 22. The meeting was the regular quarterly conference of agents with the company. A dinner and conference was held at the Columbian Club at noon on July 25 and on the following day the agents, accompanied by J. J. Cole, president, C. P. Henderson, sales manager, and H. C. Bradfield, manager of newspaper advertising, went to Detroit to inspect the Northway Motor and Mfg. Co.'s and Timken axle plants.

Shanks Pushing Kelly Trucks—The Kelly Motor Truck Co.'s western department, embracing nine Pacific coast and adjacent states, and under the management of Charles B. Shanks, has just moved into its new headquarters in San Francisco, a 200 by 200 foot combined garage, service depot, sales rooms and offices, at the corner of Fourth and Harrison streets. The garage has capacity for ninety trucks. Plans are now being figured for an annex to the present structure, which will house an additional eighty trucks. The present structure is, and the annex will be, of brick and concrete. Frank G. Miner has joined

Mr. Shanks' sales organization and is in charge of retail operations in San Francisco and bay cities.

Name Changed—Papers have been filed with the secretary of state changing the name of the Jewell Carriage Co. of Cincinnati, manufacturer of the Ohio, to the Ohio Motor Car Co. C. F. Pratt is president and Charles M. Anderson secretary.

Another Ford Plant—Memphis, Tenn., is to be made the distributing point of the Ford Motor Co., for a large territory in the South, as soon as the new building of the company is erected. The Ford company has just closed a contract for a six-story, reinforced concrete building to go up in Union avenue at the Southern Railway Co.'s crossing. The new edifice is to cost $85,000.

New Use for Motor Car—Motor cars are being used profitably in the Spanish moss industry in Louisiana. Spanish moss, which grows profusely on the trees and bushes in this section, is valuable as packing for cushions. Previously the gathering has been in the hands of negroes who could not be relied upon to bring any specified quantity regularly. The irregularity of the deliveries led to a New Orleans furniture factory sending out its motor delivery wagons to bring in a supply. The experiment was so successful that it has been made a regular feature of the business and the motor cars are being maintained in the new service.

Motor Cars in China—Up to a year ago, according to Daily Consular Reports, there were only about a dozen motor cars in north China. These were owned in Peking and Tientsin, these being the only cities which have improved roads on which cars are available. There are about 50 miles of wide, macadamized street in each of these cities. About a year ago an American agency and repairshop were established in Tientsin and a sufficient number of American cars were sold so that a British firm was encouraged to make a similar start. If China possessed proper roads for them there would be an extensive market for motor cars in that country.

New Tire Chain Company—Toledo has a new industry directly allied with the motor trade. The Walker Tire Chain Co. is the caption of the new concern, which has a capital stock of $150,000. The company, originally the Walker Chain Mat Co., was organized last June and incorporated June 18, 1912. The concern will manufacture a patented anti-skid chain. The officers of the company are: President, H. F. Rohrman; vice-president, Hugh Williams; treasurer, Maurice A. Carter; secretary, Charles A. Newman. Among the stockholders is John A. Dix, governor of New York. The offices of the concern are located at 545-646 Ohio building, and the plant will be temporarily located in the Factories building when it is completed. The foundry work will be done at Bridgeport, Conn., and Brooklyn, N. Y., until the company builds its factory in Toledo, which it contemplates doing as soon as a suitable site can be secured. The assembly work will be done in Toledo.

Dorris Plant Nearly Ready—The brick work on the new Dorris plant at Sarah street and Laclede avenue, St. Louis, has been completed and the company will move in about the first of September. The Dorris production will be increased 50 per cent for 1913. The concern will increase its capacity for building trucks at least half, as the delivery vehicles turned out have been very successful.

Coler Willys' Ad Man—Announcement has just been made here of the appointment of Ernest Coler as manager of the advertising departments of the John N. Willys group of motor car factories. Mr. Coler will supervise the work of the departments of the Garford at Elyria, Ohio, the Gramm Truck Co., Lima, Ohio, and the Willys-Overland Co. in this city. His headquarters will be in Toledo in the general executive offices of the Willys interest.

Yeoman Joins Ames Forces—George W. Yeoman, sales and advertising manager of the Continental Motor Mfg. Co. of Muskegon, Mich., and Detroit, has severed his connection with that company to become manager of the Ames Motor Car Co. of Owensboro, Ky., which is an off-shoot of the F. A. Ames Co., for the past 30 years one of the largest manufacturers of carriages in the country. Mr. Yeoman is vice-president and general manager of the motor car company.

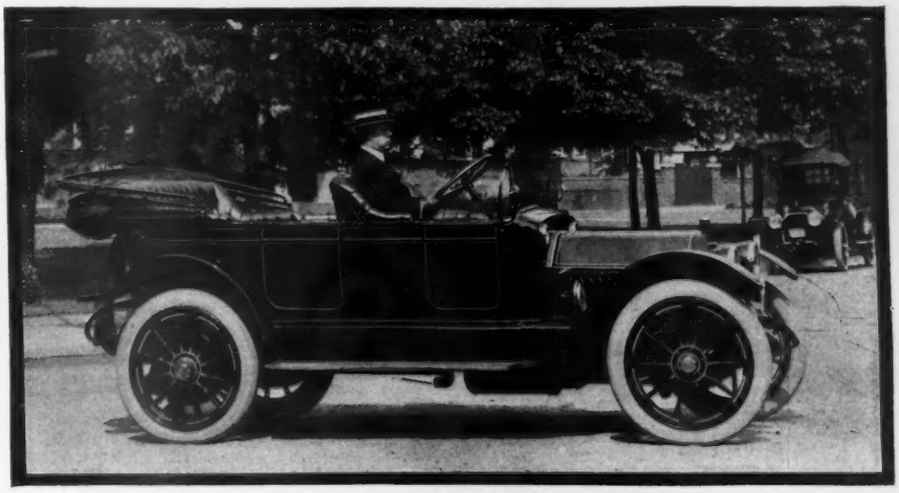
Moving to Kalamazoo—The Spayde Mfg. Co. of Vicksburg, capitalized at $50,000, will locate in Kalamazoo, Mich., within the next week. Articles of incorporation have been filed with the secretary of state and the Burtt building at Fulford and Clinton streets has been purchased. The company, which was organized at Vicksburg several years ago, manufactures parts under patents granted to Herbert O. Spayde, the president. It recently outgrew its quarters at Vicksburg and decided to remove to Kalamazoo. Following are the incorporators: Herbert O. Spayde, Henry E. Spayde, C. L. Major and Oliver Coleman. All reside at Vicksburg, Mich.

Shiland With Havers—Harry E. Shiland, formerly general sales manager of the Buick Motor Car Co. and for over 12 years an active factor in the manufacturing and sales of motor cars, has accepted a position as assistant general manager and director of sales of the Havers Motor Car Co., of Port Huron.

Lion Recovers from Fire—The Lion Motor Car Co., of Adrian, Mich., whose $500,000 plant was destroyed by fire in June, is about ready to turn out cars again. The company has temporary quarters in the plant formerly occupied by the Wing & Parson Co. Ten thousand dollars subscribed by the people of Adrian is being used in the sale of $100,000 additional capital stock.

Montreal Show Sanctioned—At a meeting of the board of directors of the Automobile Club of Canada, official sanction was given for the holding of the 1913 Montreal show, under the management of E. M. Wilcox. The Automobile Club of Canada has received official permission from the government to make use of the drill hall, this being the only building in the city suitable for the purpose in the early part of the year. This show will most likely be held in January; the exact dates, however, have not as yet been settled upon definitely.

Additions to Mercer Factory—The Mercer Automobile Co. of Trenton, N. J., has found it necessary to construct an additional factory building. Ground will be broken in a few days for a new structure of the saw-tooth type, measuring 160 by 161 feet. This building, when completed, will house the assembling, finishing, and painting departments, as well as the tin shop, riveting shop and store room. Quite a lot of new machinery has been purchased, and will be put in operation when the new building is opened. Plans are also being drawn for a new office building.



ONE OF NEW SERIES OF F. B. STEARNS CO.

Development Briefs in Accessory Field

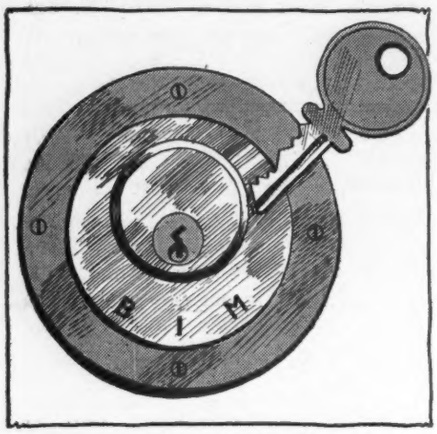


FIG. 1—AUTOMATIC SWITCH LOCK

B. & L. Caster Safety Front Axle

COMBINING ease of steering with a safety feature that depends upon dynamics instead of mechanics for its action, the caster axle, which is controlled by the B. & L. Caster Axle Co., of Chicago, is illustrated in Fig. 3. This axle differs from standard in that the steering knuckles are placed in the same plane as that in which the wheel revolves, thus relieving the steering connections of the constant strain that is exerted on these members in standard practice.

The king bolt is located in the center of the wheel plane, ⅜ inch forward of the center of the wheel, thereby deriving its caster feature. The effect of this is self-alignment, the eccentric placing of the king bolt, causing the wheel to gather just sufficient, in connection with its camber, to travel in a straight line; this independent of any external connection.

The suspension of the weight forward of the spindle also is an advantage, as it distributes the radial thrust more evenly over the whole circumference of the bearings. This placing furthermore causes the wheels to automatically return to straight ahead in finishing a turn without any effort on the driver's part. Backlash is eliminated, as all wheel thrust is transmitted in a direct line with the center of the king bolt. The bearings are carried in an extended hub, outside of the wheel-center, thereby being in a better position to absorb sidethrust in rounding curves or in running on a laterally inclined plane.

The claims set forth by the inventor are that a car so equipped will steer 85 per cent easier; that owing to its protected position, the knuckle cannot be broken; that the car can be turned around in three-quarter the radius ordinarily required for one of its wheel-base; that the wheels may be turned as easily when the car is at rest, as when in motion; that skidding is largely eliminated; and that a margin of safety is provided in case of a broken steering conection by the fact that by reason of its caster or eccentric pivoting, the wheels will continue in a straight line when not directed otherwise by the operator. This latter fact has been demonstrated by an experiment, it is claimed, wherein a caster axle was disconnected from its controls, the wheels keeping to a true course notwithstanding, and in another where the tie rod was removed, the car being steered satisfactorily with but one wheel, the free one following the true track by reason of its caster mounting.

Thermostatic Vulcanizer Regulator—New Speedometer —B & L Front Axle

Brown Speedometer

Operating on the centrifugal principal, the Brown speedometer, made by the Brown Speedometer Co., which is soon to become a part of the Corbin screw corporation of New York, is claimed to possess many points of superiority over the magnetic type. The action is secured by a set of compound centrifugal governors, which operate an indicating hand, which is mounted in the center of the dial, and turns on an arc of 240 degrees. The dial is of a rich brown color, and the hand and calibrations are in white, which combination is said to be much more conspicuous than black and white. The instrument is driven by a worm gear from the flexible shaft, and is provided with a standard trip odometer. It is claimed that this device will record speeds from 2 to 100 miles with absolute accuracy, being unaffected by heat or vibration. The instrument registers in either forward or reverse direction, and is constructed with especial attention to wearing qualities. It is made with dials of from 60 to 100 miles, all dials being 4 inches in diameter, with 99,999 mile disk odometers. In Fig. 6 is shown the dial, odometer gears and the dual governor.

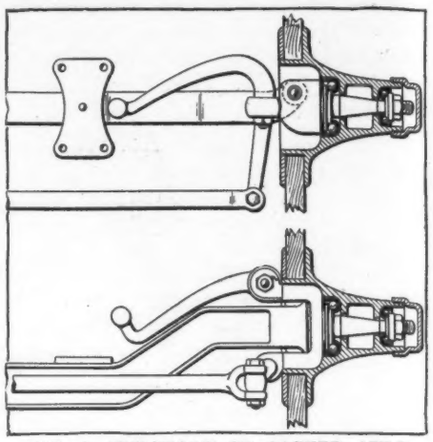


FIG. 3—KINGBOLT OF CASTER AXLE

Electric Light Adapters

In addition to a line of electric lamps, the Cleveland Storage Battery Co., St. Louis, Mo., offers an adapter for gas lamps that readily converts them into electric headlights. Any standard make of gas lamp can, with these adapters, be remodeled for electric equipment. The outfit includes a parabolic reflector, the same as used on the regular electric lamps, also a simple device for the adjustment of bulbs to the focus of the reflector. A Mazda coil filament lamp, a socket, and connector plug complete the outfits, which come in reflector diameters of from 7 to 12 inches and from 10 to 20 candlepower. The outfits are priced reasonably and are easy to install. The outfit is illustrated in Fig. 4.

Gas Lighter and Controller

Embodying in one compact unit the functions of gas controller and lighter, the Grinnell gas controller and igniter is made by the G. C. A. Mfg. Co., of Pittsfield, Mass. It requires five dry cells or a storage battery to operate, and provides a means of instantaneous lighting, dimming, or extinguishing the gas lamps of a motor car from the driver's seat.

Referring to Fig. 5, the device is seen to consist of a controller unit, wiring and ignition points applied to the lamp burners. The device is mounted on a bracket which is secured to the car frame, convenient to the driver's hand, by bolts FF. It consists of a trembler coil, R; controller shaft S, connected to the gas valve by the flexible shaft T, and actu-

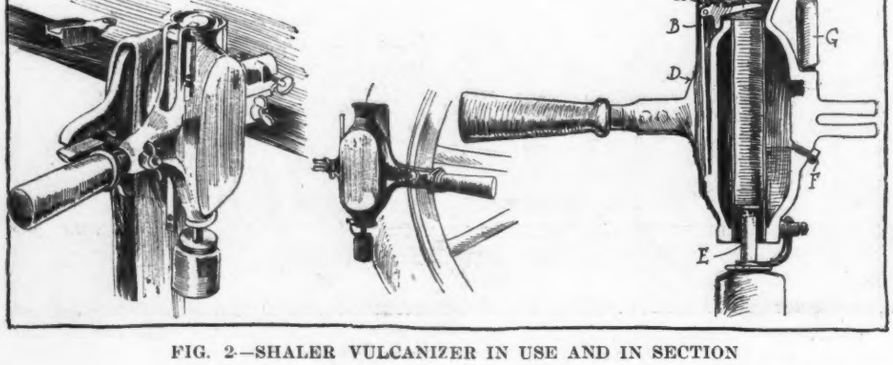


FIG. 2—SHALER VULCANIZER IN USE AND IN SECTION

New Things for the Motoring Public

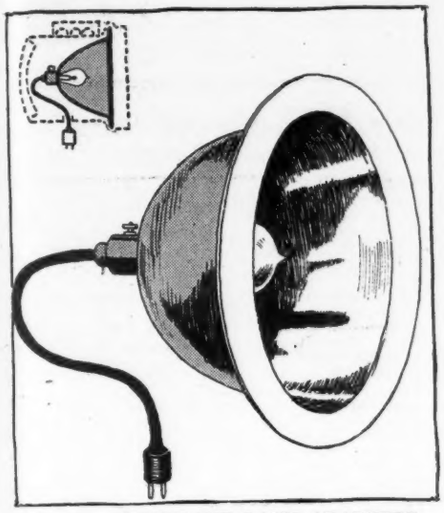


FIG. 4—CLEVELAND LAMP ADAPTERS

Electrifying Gas Lamps—New Device Lights, Puts Out and Controls Headlights

ated by handle H through bevel gears at G. The connection to the gas tank is by means of a square socket in the coupling at the end of the flexible shaft. The coil is wired to the battery by a single wire, another wire connecting the lamps in series, the last lamp being grounded to the car frame, as is the battery.

The lamps are lit by turning the handle H to the left which opens the gas valve by means of the shaft T, the cam C which is fixed to shaft S being brought against the plunger P, which, being raised by it, closes the contact inside of its case. The contact made, the trembler vibrates, and the high-tension circuit, jumping across the spark gaps on the lamp burners, ignites the gas being discharged by them. The handle then is turned to the right until the contact is released by cam C. The gas valve is closed for dimming or extinguishing by turning it to the right.

Adjustment is provided for cam C by means of the adjusting screw A, which permits the valve to be opened further before the contact is made, permitting a greater light, or allowing for a decrease in pressure, as the tank is exhausted. To change gas tanks, it is only necessary to loosen the small set screw on the flexible coupling, and slide the tank out. The lamps are equipped with hard rubber insulating blocks with binding posts. The ignition points are of hard-drawn copper, bent to grip the forked lava tips, and held in place by brass tension springs at the bottom of the lamps. This construction permits instant removal, and makes them immune to vibration, it is claimed by the maker.

Automatic Lock Switch

Equipped with a Yale pin-tumbler lock, the Blackburn automatic lock switch, consists of a two-point switch, the plug of which consists of a Yale key, which cannot be removed unless the switch is open and which cannot be picked, it is claimed. The switch itself cannot be removed unless the key is in the lock and turned to close one or other of the contacts, even though the four screws be removed. The lock switch is applicable to any ignition system, and when applied to the coil box the circuit cannot be faked. The appliance is neat in appearance, and has but one control, namely, the key. It is shown in Fig. 1.

Essenkay Tire Filler

Among the new tire fillers that in the past season have attracted so much attention, Essenkay is notable. This substance, like most compounds of its nature, is compounded by a secret formula from non-rubber ingredients. It is applied in the manner that seems to be most popular with tire fillers, i. e., in the form of a ready-moulded tube, composed of a cloth stocking into which the compound is injected, being applied to the tire in the same manner as the ordinary inner tube. It is of a light yellow color, and is claimed to be immune alike to the action of heat sufficient to melt lead, freezing in a block of ice, acids, and alkalis, with the exception of aqua regis, which happens to be the only combination of acids that is known to destroy gold.

It is asserted that Essenkay will not change shape under sustained pressure.

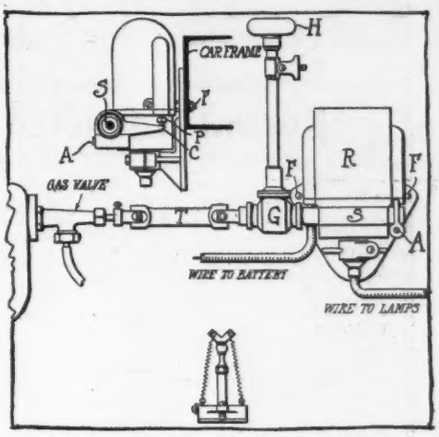


FIG. 5—PIERCE LIGHTER AND CONTROLLER

Improved Shaler Vulcanizer

To make the maintenance of a uniform temperature certain, the Shaler vulcanizer has been equipped with an ingenious thermostatic damper that controls the temperature so that the steam pressure is kept automatically high enough to properly vulcanize the tire or tube, and yet prevents overheating and burning. The vulcanizer consists of an appropriately shaped body of cast iron which is clamped to the tire. Within the hollow interior, a metal tube is expanded to form a flue for the combustion of gas generated by a small wickless alcohol lamp.

Referring to the drawing, Fig. 2, E is the burner and D, the body of the device. C is a damper over the top of the flue which governs the amount of heat generated by the lamp. At A is attached the thermostatic element B, which consists of a spring, composed of strips of brass and steel riveted together, which flexes under the influence of varying temperatures, due to the uneven expansion of the two metals. Adjustment of the relation of C to B, is provided by a small screw at A, and as a check on inexperienced tamperings with this adjustment, a safety valve is provided at G.

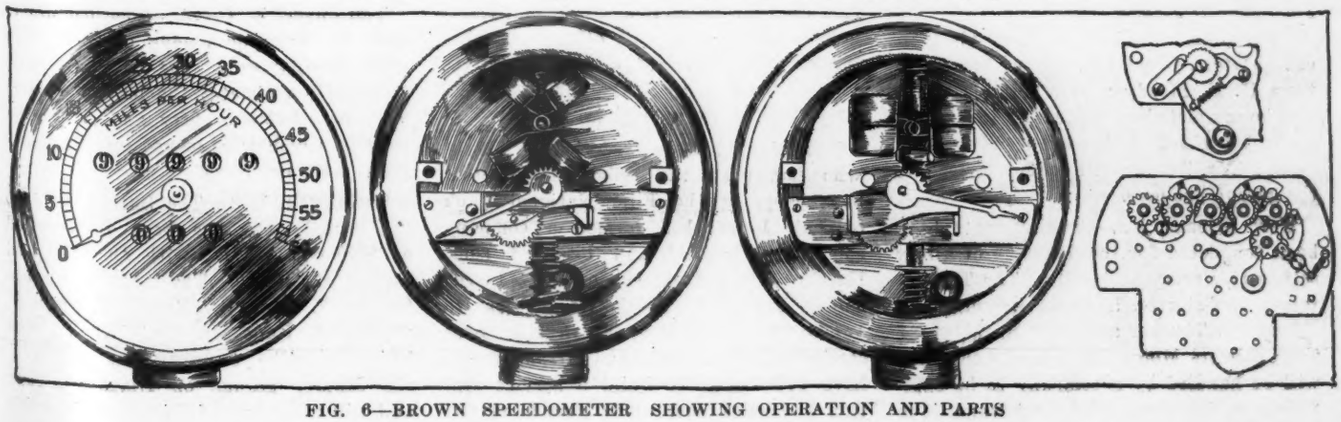


FIG. 6—BROWN SPEEDOMETER SHOWING OPERATION AND PARTS

Brief Business Announcements

Recent Agencies Appointed by Pleasure Car Manufacturers

Town—	Agent	Make
Atlanta, Ga.	Atlanta Auto Sales Co.	Henderson
Asheville, N. C.	Asheville Auto Co.	R. C. H.
Addison, Ill.	Schram Brothers	R. C. H.
Akron, O.	Akron Auto Garage Co.	R. C. H.
Asbury, Park, N. J.	Sofield Automobile Co.	R. C. H.
Arlington Hgts., Mass.	A. H. Ward	R. C. H.
Belvidere, Ill.	H. H. Collier	R. C. H.
Burlington, Ia.	Hawkeye Motor Car Co.	Hupp-Yeats
Chicago	J. B. Kelly	R. C. H.
Crandon, Wis.	Fred J. Rogers	Henderson
Covert, Mich.	Shattuck & Son	R. C. H.
Chicago	Schroeder and Son	R. C. H.
Collingdale, Pa.	George H. Custer	R. C. H.
Devils Lake, N. D.	C. L. Dobbs	R. C. H.
Delano, Minn.	William Heinen	R. C. H.
Dunnellen, N. J.	Service Motor Co.	Henderson
Edwardsburg, Mich.	Pearson & Pearson	R. C. H.
Elgin, Ill.	Henry Muntz Co.	R. C. H.
Fall River, Mass.	F. W. Davis and Sons	Henderson
Glens Falls, N. Y.	Glens Falls Automobile Co.	E-M-F
Glens Falls, N. Y.	Glens Falls Automobile Co.	Rambler
Glans Falls, N. Y.	Glens Falls Automobile Co.	Flanders
Germantown, N. Y.	A. W. Hover and Brothers	Franklin
Grundy Center, Ia.	A. C. Schafer	Henderson
Jackson, N. C.	Northampton Motor Co.	R. C. H.
Kennebunk, Me.	Don Chamberlin	R. C. H.
Long Beach, Cal.	Hammond-Ballard Co.	R. C. H.
Loramie, Wyo.	James G. Klock	R. C. H.
Lodi, O.	A. A. Sanford	R. C. H.
Los Angeles, Cal.	J. W. Willcox Co.	Henderson
Memphis, Tenn.	V. L. Rogers, Jr.	R. C. H.
Milledgeville, Ill.	E. C. Miller	R. C. H.
Missoula, Mont.	J. J. Deakin	Henderson
Monmouth, Ill.	Weir Moore Motor Co.	R. C. H.
New York	Henderson Eastern Motors Co.	Henderson
Onancock, Va.	R. E. Powell	R. C. H.
Pipestone, Minn.	Bunn & Goembel	R. C. H.
Rochester, N. Y.	Knipper-Kipp Co.	Henderson
Statesville, N. C.	R. H. Troutman	R. C. H.
St. James, Minn.	J. J. Schutz	R. C. H.
Sanford, Me.	Charles Lord	Peerless
Sanford, Me.	Charles Lord	Stevens-Duryea
Sanford, Me.	Charles Lord	Chalmers
Sanford, Me.	Charles Lord	Paige-Detroit
Sanford, Me.	Charles Lord	Pope-Hartford
Syracuse, N. Y.	John Valentine Co.	Paige-Detroit
San Benito, Tex.	Whittlesey Gar. and Mach. Co.	Henderson
St. Louis, Mo.	Model Auto Sales Co.	Henderson
Thompsontown, Pa.	Harvey Hertzler	R. C. H.
Wapakoneta, O.	McFarland and Thompson	Mercer
Waterloo, Ia.	Black Hawk Auto Co.	Henderson
York, Pa.	Auto and Truck Sales Co.	Henderson

NASHVILLE, TENN.—A distributing agency for the south is to be established in this city by the Michigan Buggy Co.

Baltimore, Md.—L. S. Nock, of Crisfield, has been named as representative for the Detroiter-Baltimore car in Somerset county.

Ludington, Mich.—The bicycle business and garage formerly owned by F. M. Hoglund at 233 Dowland street has been sold to Frank Seymour.

Seattle, Wash.—With the placing of the agency for the Garford car with the Waterhouse Trading Co., another important addition is made to the Seattle row.

New Haven, Conn.—Frank W. Rowley, of New Haven, Conn., who has just been granted patents on a new tire composed of steel springs, is forming a company there to manufacture them.

Detroit, Mich.—The King Motor Car Co. has appointed the Matheson Automobile Co., 170 Victoria avenue, Toronto, Canada, as its dealers to cover a large part of the province of Ontario and a section of the province of Quebec.

Peoria, Ill.—Having outgrown his present quarters, Charles L. Turner has leased from H. H. Moody a new building which will be completed by September 15. It will be 50 by 150 feet, located at 2004 Main street. Mr. Turner will confine himself to the garage business.

New Orleans, La.—Arrangements have been completed for the financing of a new self-starter company locally. The Thurber rotary self-starter, a recent invention by Edward J. Thurber and Jack Racklypt, of the Chalmers Motor Car Co. of Louisiana, will be handled by a company to be capitalized at $200,000. The plant which it is proposed to build probably will be located in Detroit.

Greenville, O.—The York Supply Co. has closed a contract for the Republic tire agency in three surrounding counties.

Detroit, Mich.—Hupp-Yeates electrics will have representation in the south, A. J. Carrier having been appointed southern wholesale representative.

Wapakoneta, O.—The agency for the Mercer line has been taken by Clarence J. McFarland and Boone Thompson. The territory covered by the two includes the entire state.

Buffalo, N. Y.—During the past week the additional $4,000 stock subscription was secured for the removal of the Niagara Gasoline Motor Co. from Buffalo to Dunkirk, N. Y., where a factory will be erected on Brigham road. The entire amount subscribed was $50,000.

Baltimore, Md.—Arrangements have been made whereby the Detroiter-Baltimore Co., handling the Detroiter car, will have a larger store. The company has completed negotiations with the Lozier Sales Co. to take over the property at North and Maryland avenues for its new offices and salesrooms. The Detroiter company has the agency for the Detroiter for Maryland, Virginia and West Virginia.

Fall River, Mass.—Frederick W. Davis, who has been the teller and general bookkeeper of the First National Bank of Fall River, has formed a company comprising himself and his two sons, Harold C. Davis and Frederick L. Davis, called Frederick W. Davis & Co., to handle the Henderson car in the lower section of Massachusetts. Arrangements have been made to build a service station and salesrooms at 47 French street. Mr. Davis will still continue his connection with the bank.

Washington, D. C.—The Essenkay Sales Co. has opened a salesroom at 814 Seventeenth street, N. W., with W. G. Fairbank as manager.

Tiffin, O.—E. C. Hanes has severed his connection with the Tiffin Auto and Taxi Co. C. H. Lines and E. J. Rosenberger have entire control of the concern.

Chippewa Falls, Wis.—T. H. Field, Rice Lake, Wis., district agent in a large territory for the Overland, is contemplating the establishment of a branch at Chippewa Falls.

Detroit, Mich.—W. F. Schmeltz, formerly with the Detroit Steel Products Co., has been made special sales representative for the Poss Motor Car Co. with territory in Kentucky, Indiana and Ohio.

Baltimore, Md.—The Taxi Cab Co. of Baltimore has moved into its new spacious quarters on Cathedral street near Chase. The company was formerly located on Howard street near Franklin, right in the theater district.

Vancouver, B. C.—A $2,000,000 fire on July 20 destroyed among other big concerns the garage of the A. B. C. Motor Co., which estimates the loss on cars at $225,000. Between fifty and sixty cars, most of which were owned by commercial firms, were destroyed.

Sheboygan, Wis.—The Sheboygan Auto and Supply Co. has been incorporated at Sheboygan, Wis., with an authorized capital of $15,000. The incorporators are Charles F. Kade, Sr., Robert H. Thieman, Charles F. Kade, Jr., and Mrs. Caroline Thieman. The company has purchased the Maurer garage on Niagara avenue and will erect two additional stories, with

a 50 by 50 foot addition in the rear. Agency lines have not been closed.

Schenectady, N. Y.—The Union garage, Union and Barrett streets, was sold last week by Tefft & Miller to Fred Helms.

St. Louis, Mo.—The Paine Automobile Co. has taken on the Crow-Elkhart line manufactured in Elkhart, Ind., in connection with the Haynes and Lion.

Sacramento, Cal.—Don Lee, California distributor of the Cadillac line, has recently opened a branch in Sacramento. E. G. Anderson will be resident manager.

Syracuse, N. Y.—H. R. Jennings, formerly with the B. F. Goodrich Co., Akron, O., has opened a vulcanizing and tire repairing shop at 304 Merriman avenue, this city.

Plymouth, Ind.—The Methodist church at Plymouth has been sold to Oliver H., James W. and John W. Lawrence, who will commence work at once to remodel the church building into a garage.

Columbus, O.—The Broad-Oak Automobile Co., of 622 East Broad street, will move its repair department from the first to the second floor in order to give additional space for live storage. The company recently changed hands.

Baltimore, Md.—A change has been made in the local agency of the Everitt car and Board truck. These vehicles are being handled in this territory by the Square Deal Motor Co., W. K. Shelley, general manager. The company is located at 413-415 West Fayetter street.

Washington, D. C.—The Empire Automobile Repair Co. has been formed by Detlow Marthinson and J. Perry Kinyoun, with a salesroom and shop at 1521 Fourteenth street, N. W. The company has secured the Federal truck agency and is negotiating for a pleasure car agency.

Boston, Mass.—J. S. Harrington & Co., agents in Boston, Providence and Worcester for the Everitt, has added C. M. Dow and Patrick Gleason to the sales force, the latter to travel through New England with Wallace Hood, who went to Boston from the Everitt factory recently.

New Britain, Conn.—P. and F. Corbin are now moving the machinery for their door-check department into the building formerly used to manufacture the Corbin motor cars at New Britain. The space thus vacated at the main plant will allow the manufacture of the company's other lines.

Washington, D. C.—The Bowles Motor Car Co., agent for the Warren-Detroit, has made application to the court to change its name to the Warren Motor Sales Co. The company is to be reorganized and in future will be in part a factory branch of the Warren Motor Car Co., of Detroit. Charles Kloppmeyer will be the general manager. The salesroom at 1610 Fourteenth street, N. W., adjoining the company's present quarters at 1608 Fourteenth street, has been leased and will be merged with the main salesroom.

Syracuse, N. Y.—The T. A. Young Co., which has had the agency for the R. C. H., Peerless and Marmon cars, has gone out of business.

Baltimore, Md.—The agency for the Rapid truck in Maryland, Virginia and West Virginia has been discontinued by the Auto Outing Co. of Baltimore.

Columbus, O.—The Columbus branch of the Goodyear Tire and Rubber Co., Ross A. White, manager, which is located at 54 North Fourth street, will move about August 15 to a new building at 87 North Fourth street.

Philadelphia, Pa.—Fred Browning, having for 9 years been associated with the Autocar Co. of Ardmore and more recently the guiding genius of the Continental Motor Car Co., handling the Speedwell line of pleasure cars and trucks, has joined the sales force of the White Co. as manager of the truck department.

Beloit, Wis.—James W. Menhall, state agent for the Brush and Courier and local representative of U. S. M. Co. products, will retire from business locally on August 1 to become traveling representative of the United States Motor Co. in Wisconsin. The garage and agency business will be conducted by G. F. Beedle and Drs. P. A. Fox and C. E. Smith.

Syracuse, N. Y.—The Jefferson Garage Co., Inc., has secured the Freeman block in East Jefferson street, recently damaged by fire, and will remodel it for use as a garage. The members of the company are Antonio Matzene, Charles J. Roehm and Charles J. Baumer, all of Syracuse, and the capital is $30,000. Alterations will cost $10,000, and the building is promised complete for its new uses by September 1.

Los Angeles, Cal.—The Los Angeles agency of the Stevens-Duryea has passed from the Eastern Motor Car Co. to the recently incorporated English Motor Car Co., of which P. A. English is president and Clarence A. English secretary and general manager. Temporary quarters have been secured at 1036 South Grand avenue.

Indianapolis, Ind.—The Cole Motor Car Co. has appointed C. J. Corkhill assistant sales manager with headquarters at Omaha, Neb. He will have charge of a territory bounded by the Mississippi river on the east, the Gulf of Mexico on the south, the Rockies on the west and Canada on the north. He will have the same supervision as the general sales manager of the Cole Motor Car Co. in his territory. J. R. Moler is to hold a similar position in the territory west of the Rockies, up and down the coast. Mr. Moler will make his headquarters with the large Cole distributors, but will do continual traveling among Cole agents. J. R. Hamilton will be associated with Mr. Moler as the west coast Cole service expert. W. B. Lacer is a second Cole service expert added.

St. Louis, Mo.—The Prest-O-Lite Co. has opened up a service station at Channing and Locust streets, in connection with its branch.

Minneapolis, Minn.—The Pence Automobile Co., Minneapolis and St. Paul, has been appointed agent in Minnesota, the Dakotas and Montana for the Timken roller bearings.

Martinsburg, W. Va.—The Norwalk Motor Car Co. announces the Matheson Automobile Co., of Toronto, Ont., as its distributor for the dominion, with headquarters at Toronto.

South Bend, Ind.—J. H. Hansen, of the J. H. Hansen Co., local dealer, has been appointed general agent for the R. C. H. Corporation for the states of Iowa, Kansas and Nebraska and will go to Omaha, Neb., on August 1 to assume his new managerial duties.

Detroit, Mich.—Articles of association have been filed in this city by the Mote Demountable and Detachable Rim Co. with a capital stock of $30,000. The paid-in capital is $3,000. The term is 30 years and the stockholders are Herman Mote, H. L. Bock and W. M. Elliott.

Baltimore, Md.—The Colonial Motor Co. is having a garage built on the Ingram lot at North avenue and Lovegrove alley. The garage will be two stories high, of ornamental concrete and brick and will be 94 feet front on North avenue and have a depth of 303 feet and will be fireproof.

Winnipeg—A. R. Bredin, G. E. Webb, J. M. Nichols, Edward Spice and J. R. Crawford have been incorporated under the name of the Peerless Punctureless Tire Co., Ltd., for the purpose of dealing in and handling tires. The company is capitalized at $50,000, with head offices at Winnipeg.

San Francisco, Cal.—F. T. Burke has joined the Kelly Motor Truck Co.'s western department, with headquarters San Francisco. Mr. Burke will give his attention to the development of the service department which is to look after the entire Pacific coast territory, which includes nine states and the Hawaiian Islands.

St. Louis, Mo.—The Hudson-Phillips Automobile Co. has been formed in St. Louis and has taken on the Hudson agency formerly handled by the Phillips Automobile Co., which went out of business after a disastrous fire a month ago. The Hudson-Phillips company has taken quarters at 5803 Delmar avenue.

Detroit, Mich.—Harry Postal and Richard Fair have formed a new concern to be known as the Postal-Fair Motor Co., which has succeeded the Lion Motor Sales Co. The new organization has been made a sales branch of the Michigan Buggy Co., of Kalamazoo, maker of the Michigan cars, and in addition to marketing these cars, the Lion and Peerless machines, which

were handled by the Lion Motor Sales Co., will be carried.

Minneapolis, Minn.—The Moore Carving Machine Co., agent for the Elmore, denies that R. G. Ragen has been appointed its sales manager.

Grand Rapids, Mich.—F. G. Withrow and G. E. Finch, of Akron, O., have opened a shop at 15 Library avenue for the repairing of tires. They have secured the agency for the Republic tire.

New York—Charles E. Riess, of New York city, president of the American-Marion Sales Co., 1896 Broadway, has just closed 1913 contracts with the American Motors Co. and Marion Motor Car Co. for the New York district.

Kaukauna, Wis.—T. W. McFarlane has organized the Kaukauna Motor Sales Co. and established a garage and agency on Second street. The concern will distribute the Marathon in a large northeastern Wisconsin territory.

Olean, N. Y.—The machine shops and foundry of the Clark Brothers new manufacturing plant at Olean will be of steel and concrete construction. Plans for the new building have just been completed. The two new structures will be 100 by 300 feet. The Clark Brothers foundry at Belmont, N. Y., was recently burned.

Boston, Mass.—Christopher F. Whitney and Charles H. Barney have sold out their interest in the Whitney-Barney company to Frank B. Wilcox. The latter and Fred P. Lucas probably will carry on the business. The firm handled the Selden and Chadwick in Boston. Mr. Whitney intends to enter the real estate business and Mr. Barney will continue as a mining broker.

Boston, Mass.—Edgar A. Ordway has been added to the sales force of the G. E. and H. J. Habich, Boston distributor of the Cole.

Columbus, O.—The Columbus Auto Brass Co., which has been operating a plant for the manufacture of supplies and accessories at 175 West Maple street, is erecting a new factory at the corner of Fourth and Warren streets.

Tacoma, Wash.—The latest firm to join Tacoma row is the Union Motor Car Co. at 717 South C street. R. A. McCormick is president and N. L. McCormick, his brother, will be associated with him, while George A. Stewart will assume the managership. The new concern will handle Pope-Hartford, Peerless, Chalmers and Buick.

Indianapolis, Ind.—H. C. McVey has been appointed Indiana representative for the Little cars, manufactured by the Republic Motor Car Co. He has opened headquarters and an Indianapolis salesroom at 338 North Delaware street, this city. Mr. McVey until recently has been city sales manager of the Indianapolis sales branch of the Buick Motor Co.

Baltimore, Md.—The local branch of the Stoddard-Dayton Automobile Co. will be discontinued. H. S. Block, who has had charge of this branch, will continue the Stoddard-Dayton company as an agency, having made arrangements to purchase the same from the United States Motor Co. He will select a new location. The present location has been taken over by the local branch of the Locomobile Co. of America, T. W. Wilson, Jr., manager.

St. Louis, Mo.—The United States Rubber Co., St. Louis branch, has moved into its new quarters at Compton avenue and Locust street.

Syracuse, N. Y.—F. B. Lounsberry, a graduate of the University of Michigan, was recently appointed assistant metallurgist of the H. H. Franklin Mfg. Co.

Albany, N. Y.—The C. F. Weeber Mfg. Works has discontinued the agency for Ford cars and has substituted the Studebaker agency. This company also handles the Haynes.

Milwaukee, Wis.—Walter O. Ladewig will erect a $10,000 garage and repair shop at 1459-1461 Green Bay avenue. It will be of reinforced concrete construction, 32 by 98 feet in size.

Buffalo, N. Y.—The Lumen Bearing Co., which concern recently secured membership in the Automobile Trade Credit Association, has begun the construction at Sycamore street and Belt Line, Buffalo, of a two-story machine shop to be operated in connection with its already mammoth plant. The present plant contains 70,000 feet of floor space.

Syracuse, N. Y.—John H. Valentine, head of the company bearing his name and which has had the agency for Chalmers cars, has retired from the concern and become connected with a Rochester company interested in the manufacture of motor trucks. Charles G. Hanna, inventor of the Hanna self-starter, is now at the head of the Valentine company. The Paige-Detroit agency has been added.

Recent Incorporations

Akron, O.—Akron Airless Tire Co., capital stock, $50,000; to manufacture and sell tires and rubber goods; W. S. Brooks, J. J. Surbey, I. N. Thompson, F. H. Beyea, H. L. Cole.

Akron, O.—Majestic Rubber Co., capital stock, $3,000; to manufacture rubber goods; incorporators, E. Christian, O. W. Baum, J. A. Myers, A. L. Neiswanger, J. H. Ault.

Alexandria, Md.—Check Spring Motor Co., capital stock, $100,000; incorporators, C. E. Hooper, C. L. Lamber, A. S. Check.

Brooklyn, N. Y.—E. Reineking Automobile Supply Co., capital stock, $5,000; incorporators, E. Reineking, J. Lucht, B. F. Nienstedt.

Camden, N. J.—Lewis Grease-Cup Co., capital stock, $100,000; incorporators, J. A. Lewis, W. L. Ford, M. G. Ryan.

Canton, O.—Central Motor Car Co., capital stock, $25,000; general motor car business; incorporators, R. F. Wilson, D. L. Tschantz, D. B. Wilson, M. Tschantz, E. Wilson, A. Herr.

Cincinnati, O.—Welbon Motor Car Co., capital stock, $25,000; to manufacture motor cars; incorporators, W. E. Welbon, H. S. Leyman, C. D. Wilson, C. W. Shepler, H. A. Welbon.

Cincinnati, O.—Cincinnati Motor Car Co., capital stock, $10,000; to manufacture motor cars; incorporators, C. D. Wilson, H. C. Heisey, M. C. W. Shepler, J. O. Miller, R. M. Comer.

Cleveland, O.—Arter Auto Carriage Co., capital stock, $20,000; to sell and repair motor cars and trucks, operate garage, and deal in parts and accessories; incorporators, J. G. Arter, B. Hexter, J. B. Ruhl, C. A. Chapman, C. M. Lemmon.

Dayton, O.—Walter and Moosburgger Co., capital stock, $10,000; to operate motor car livery; incorporators, L. F. Walter, W. H. Moosburgger, W. C. McConnaughey, J. J. Lynch, J. C. Shea.

Dayton, O.—Stocker Rubber Co., capital stock, $10,000; to deal in motor car tires and accessories; incorporators, A. D. Stocker, I. J. Cooper, H. H. Brewer, F. W. Johnson, J. W. Brumbaugh.

East Palestine, O.—East Palestine Rubber Co., capital stock, $50,000; to manufacture rubber goods; incorporators, E. E. Jones, U. Winter, C. A. Oatsdean, J. Hick, O. L. Shumate, A. S. Mauk, A. Hartley.

Esopus, N. Y.—L. M. S. Motor Co., capital stock, $10,000; to manufacture motors, etc.; incorporators, H. Cohen, E. Adler, J. J. Barker, W. C. Foster, J. J. Miller.

Gardner, Mass.—Brown-Rawson Garage Co., capital stock, $5,000; incorporators, S. J. Rawson, H. W. Brown, M. L. Rawson, C. Brown.

Jersey City, N. J.—Thomas G. Woolverton, Inc., capital stock, $10,000; general motor car business; incorporator, F. R. Hansell.

Memphis, Tenn.—Southwestern Motor Car Distributing Co., capital stock, $50,000; incorporators, J. W. Bondurant, N. S. Bruce, T. B. Crenshaw, P. H. Phelan, Jr.

New York—Standard Automobile Co., capital stock, $10,000; incorporators, E. H. Fritchman, H. D. Chapin, J. L. Janover.

New York—Automobile Importers' Alliance, Inc., capital stock, $750,000; incorporators, G. J. Ginsburg, L. H. Wymer, B. C. Wymer, H. W. Showers.

New York—William Strathmann, Inc., capital stock, $5,000; to manufacture and deal in motors; incorporators, W. Strathmann, H. C. Birkemeyer, J. H. Semken.

New York—Autodrome Co., capital stock, $50,000; to conduct racing exhibitions and deal in motor cars; incorporators, H. L. Curran, C. D. Curran, B. B. Jones.

Newark, N. J.—Warwick Motor Co., capital stock, $125,000; incorporators, J. D. Nicol, E. O. Woodruff, M. E. Hidden.

Newark, N. J.—W. S. Motor Truck Co., capital stock, $300,000; to manufacture motor trucks; incorporators, J. M. Woods, C. H. Tebbetts, L. T. Fetzer.

New Brunswick, N. J.—Consolidated Auto Supply Stores, capital stock, $1,000,000; incorporators, B. F. Hardesty, A. W. Dennen, B. A. Ross.

Oswego, N. Y.—Oswego Essenkay Co., capital stock, $1,500; incorporators, A. P. Murdoch, A. V. Radcliffe, C. C. Place.

Paterson, N. J.—Watson Electric Co., capital stock, $50,000; to manufacture electric motors; incorporators, C. F. Watson, A. B. Watson, J. L. Griggs.

Philadelphia, Pa.—Consolidated Auto Supply Co., capital stock, $1,000,000; to deal in motor car supplies; incorporators, B. F. Hardesty, A. W. Dennen, B. A. Ross.

Philadelphia, Pa.—Jackson Petroleum Motor Co., capital stock, $500,000; to manufacture engines and motors; incorporator, G. B. Jackson.

Pittsburg, Pa.—Pullman Auto Co., capital stock, $50,000.

Plymouth, Mass.—Plymouth Garage and Machine Shop Co., capital stock, $10,000; directors, A. J. Smith, R. E. Kingan, A. Smith.

Salem, Mass.—Motor Sales and Service Co., capital stock, $25,000; general motor car business; incorporators, G. B. Mason, E. B. Adams, G. B. Kinsman.

Salem, Mass.—Motor Sales and Service Co., capital stock, $25,000; incorporators, G. B. Nason, E. S. Adams, G. P. Kinsman.

St. Louis, Mo.—Model Auto and Sales Co., general motor car business; capital stock, $3,000; incorporators, O. Sontag, R. E. Stults, O. F. Karbe.

St. Louis, Mo.—Burns-Ramsden Motor Car Co., capital stock, $10,000; incorporators, L. N. Burns, J. H. Ramsden, C. C. Barker and others.

Walkerville, Ont.—Sparks-Withington Co., capital stock, $40,000; to manufacture motor cars; directors, W. Sparks, P. H. Withington, J. H. Coburn.

Wilmington, Del.—Ceylon Tire Filler Co., capital stock, $5,000; to manufacture and deal in tire filler.

Wilmington, Del.—Standard Auto Coach Burial Co., capital stock, $500,000; incorporators, I. Neuberger, F. H. Cothren, S. Lowenstein, W. Litzenberg, C. H. Tebbetts.